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Diversion of Pulpwood Logs Is Impending

Urgent Need For Lumber For War Effort Makes It Imperative To Market Less Pulpwood — Eight-Point Program Is Announced By Timber Controller — E. Howard Smith Heads Paper Association.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 14, 1942—Shortage of labor for pulpwood cutting, which has been one of the worries of the pulp and paper operators, has now spread to the lumber industry, and as a result the Government has not only declared the lumber and logging industry to be classed as an essential industry, but has issued an eight-point program to assist operators in stimulating output and to curtail civilian use of forest products. This includes the diversion of pulpwood logs into the making of lumber. According to Munitions Minister Howe, Canada faces "the gravest lumber shortage in her history." This, he says, is caused by the enormous war demands from the United States and by a drop in the production this year. He has appealed to every man in the industry, from the most obscure logger or millhand to the most widely-known operator, to "roll up his sleeves and boost production." He further says: "Maximum production of timber now constitutes one of our principal national necessities in the prosecution of the war. Last year the output was approximately 5,000,000,000 feet, of which about 2,250,000,000 feet were used in Canada, 1,250,000,000 exported to Britain, 1,250,000,000 sent to the United States, and 250,000,000 to other Allied countries.

"Because of the labor shortage, the 1942 production may be substantially less; at the same time, the demand has risen sharply. Unless the situation is corrected the war program will suffer."

Announces Eight-Point Program

The eight-point program, worked out and to be administered by A. S. Nicholson, timber controller, was announced as follows in the Government statement:

"1. Effective today, (September 9), the lumber and logging industry is officially classed as an essential industry.

"2. The Director of National Selective Service (Elliott M. Little) will provide, at the earliest opportunity, more manpower, chiefly bush labor, for the year-round Pacific coast timber area, and for fall and winter logging in the east.

"3. The use of timber by civilians, industries, railways, and municipalities will be rigidly controlled. Restrictive measures will be announced shortly and more stringent control will be exercised over the use of forest products by the Dominion government and its agencies.

"4. The production of newsprint will be controlled by the Newsprint Administrator of the Wartime Prices and Trade Board (R. L. Weldon, of Montreal), to conserve power and labor and to divert pulpwood logs into the making of lumber. Already quantities of pulpwood logs have been shipped to the sawmills, and pulpwood camps are being switched over to the production of sawlogs.

"5. The export of logs from the Pacific coast area to the pulp and paper mills on the United States Pacific coast will be restricted drastically. These exports are now about 15,000,000 feet of hemlock and balsam logs per month. The export of fir logs is already prohibited.

"6. To spur production, price increases on certain grades of lumber will be permitted. These increases will be absorbed by the retailers and industrial users, and will not be passed on to the civilian consumer. Retailers may obtain relief if and when the squeeze is too great.

"7. A lumber division of the Commodity Prices Stabilization Corporation will be set up immediately. With an experienced lumberman at its head, this division will provide financial assistance where and when it is required to stimulate economic production. No sound lumbering operation will be held up for lack of financing so long as it is practical and in the national interest.

"8. The general trading policies and customs of the industry will be maintained."

Curtailment of Electricity

Effective October 1, users of electricity in the Ottawa district will have their supplies of electricity curtailed in order to make more power available for war industries. The restrictions are part of the plan shortly to be put into effect throughout Quebec and

(Continued on page 22)

Paper Demand Improves in Midwest Area

Upturn Reported In Many Lines Is Attributed To Low Inventories And Need For Replacement—Regional N.P.T.A. Meeting Successful—ODT Clarifies Delivery Status of Order No. 21—Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., September 14, 1942—Sentiment in the Chicago area is better this week than it has been for some time. For some reasons—a few not readily apparent—demand has turned upward in virtually all lines. Local paper executives ascribe the major reason for the upturn as the simple fact that inventories are so low as to necessitate replacement. Kraft papers moved more strongly than for some time and groundwoods and newsprints were also more and more active. Sulphites, in nearly all grades, showed more interest and orders were both more in quantity and size. Books and covers and the general printing paper lines found some signs of pickup as Fall business began to show signs of betterment. The Spring buying surge which stocked the larders of the average citizen, has faded away and the replenishment process from workers with greater incomes than ever before has been very helpful to retail outlets. Waste papers were reported steadier though the concentrated drive for scrap in this area may start to build up the stock piles again inasmuch as Mrs. Consumer has been taught to believe that "scrap" includes waste paper as well as other items.

ONE OF THIS COUNTRY'S GREAT UNIVERSITIES is desirous of establishing a complete file of PAPER TRADE JOURNAL in their library. All copies for all the years from 1872 to 1939 inclusive are wanted.

We are unable to supply them with any copies back of 1912. From 1912 onward to the end of 1939 we can supply about one-half the number of copies needed to complete volumes for all of these years. We need the remaining one-half.

We appeal to those of our readers who have back copies of PAPER TRADE JOURNAL for any of the years 1872-1939 to help us make delivery of complete volumes for all these years. This great university will be a most fitting and proper place to keep in a permanent home those copies of PAPER TRADE JOURNAL that you have been preserving.

We invite you to advise us what you have and under what terms you will contribute them to the university.

Regional N.P.T.A. Meeting Successful

There is little room for comparison between former National Paper Trade Association meetings held in Chicago and the recent regional conference held last week at the Palmer House. All of the frills were gone, there were many more "intimate" conferences and every step taken was considered in the light of the over-all war problem. Sentiment seemed to be better—that the inventory situation was such that buyers would soon improve the current market situation. Attendance was swelled not only because of interest in the program which, formally, was boiled down to a challenging address by R. C. Kettles, Jr., head of the N.P.T.A. and a discussion of basic problems by Robert Ziegler, assistant secretary of the Association. Allied groups sent out emergency appeals concerning the meeting and the always cooperative Middle States and Central States Association combined with the Chicago Paper Association, Chicago Fine Paper Association and the Salesmen's Association of the Paper Industry to bring a truly representative audience to the city.

Advance information on inventory control as developed by a War Production Board committee headed by Eaton Read, indicated that the "controls" would not be obnoxious and much preferable to previous suggestions made earlier in the year. It was understood the "order" would take the form of inventory reports to be filed by October 25 and, if control was indicated after such reports were in, a control based on a "normal" arrived at after an average of 1939, 1940 and 1941 inventory figures.

Mr. Ziegle reviewed the paper industry up to date and covered the WPB and OPA programs with an eye toward helping paper members chart their course for the trying months to come. Trends in sales volume and tonnage and proceduring under rationing were all reviewed in closed meetings and it was again clearly in evidence that the paper trade is convinced that if it doesn't "hang together it will certainly hang separately." Commendation was given to many unselfish paper merchants who have worked on OPA and WPB committees to give the industry proper recognition and yet to serve the entire country patriotically.

Despite weather conditions, the annual golf outing of the Chicago Paper Association on September 3, attracted an interested and appreciative crowd of members and guests who carried over into the "play time" a serious review of the thoughts brought out at the regional conference.

ODT Clarifies Delivery Status

Local paper jobbers and others relying on deliveries as a part of their service are reported as "relieved" by General ODT Order No. 21 which goes into effect on November 15. While it does not replace previous orders—3, 4, 5, and 6, it does eliminate all guess work as to who is affected and with reference to "certificates of necessity" which have been talked about for some time. The keeping of weekly records of operation, the inspection of tires every 60 days, the restrictions on "necessary deliveries" these are all expected to clarify the situation once and for all. Chicago paper trade executives are cognizant of the situation and willing to cooperate once they are shown the way.

C. Carr Sherman on Overseas Duty

C. Carr Sherman, president of the H. P. Smith Paper Company, has been commissioned a captain

in the United States Army Air Force Ferry Command. He is now on active duty over seas. The H. P. Smith Paper Company is located at 5001 West 66 street, in Chicago.

Eastern Company Holds Meeting

The Eastern Company held an informal meeting in Chicago during the time of the N.P.T.A. regional conference on September 3. Eastco representatives in the city for the one day conference were entertained at a breakfast held at the Palmer House and given by C. B. Morgan, President, and J. E. Massengale, sales manager of the company. Arrangements for the breakfast, which attracted about thirty guests, were made through the Chicago sales offices at 111 W. Washington Street. Both Mr. Morgan and Mr. Massengale reviewed the Eastern lines and the company's position from a production and sales basis under present War conditions.

Newsprint Mill in Local News

The "big fight" at Thorold, Ontario over the continued operation of the Ontario Paper Company's mill, is getting plenty of publicity in the Chicago *Tribune*. The Thorold mill is a subsidiary of the Tribune. Protests against plans to reduce the electric power supply to the mill have been frequent and union labor is adding its complaint to the restriction which would, if continued, "close up the mill."

Sales Book Firms Get Desist Order

Specialty Accounting Supply Manufacturers Association, Chicago, O. L. Moore, its secretary, and 30 members of the association who manufacture and sell sales books and continuous form sales records stationery have been ordered by the Federal Trade Commission to cease and desist from engaging in or continuing any agreement or understanding to restrain and eliminate competition in price in the sale of their products.

The respondent member manufacturers are: Acme Register Co., Minneapolis; Adams Brothers, Sales Book Company, Topeka, Kans.; American Sales Book Company, Inc., Niagara Falls, N. Y.; Atlantic Register Company, Waltham, Mass.; Autographic Register Company, Hoboken, N. J.; Baltimore Sales Book Company, Baltimore; Bonnar-Vawter Fanform Company, Cleveland; Cosby-Wirth Manifold Book Company, Minneapolis; Craft Sales Book Company, Inc., Philadelphia; Egry Register Company, Dayton, Ohio; W. S. Gilkey Printing Company, Cleveland; Stephen Greene Company, Philadelphia; Hamilton Autographic Register Company, Hamilton, Ohio; Hanna Register Company, Springfield, Ill.; Philip Hano Company, Inc., Holyoke, Mass.; Lisbon Sales Book Company, Lisbon, Ohio; Roscoe M. Breeden, doing business as Los Angeles Register and Printing Company, Los Angeles; McCaskey Register Co., Alliance, Ohio.

The Miami Systems Corporation, Cincinnati; National Carbon Coated Paper Company, Sturgis, Mich.; The Potter Press, Waltham, Mass.; C. W. Potter, Inc., Waltham, Mass.; The Rotary Printing Company, Norwalk, Ohio; Schwabacher-Frey Company, San Francisco; Shelby Salesbook Company, Shelby, Ohio; The Snapout Forms Company, Chardon, Ohio; The Standard Register Company, Dayton, Ohio; Sunset-McKee Sales Book Company, Oakland, Cal.; United Autographic Register Company, Chicago; and The Wallace Press, Inc., Chicago.

The Commission finds that since 1939 the association has included virtually all the country's manufacturers and sellers of sales books and continuous form sales records stationery, and machines in which such stationery is used. The respondents' products are generally described as "printed stationery."

The respondent O. L. Moore has for several years managed and directed the affairs of the association and maintained and carried on a business of organizing and directing the affairs of trade associations and groups in various industries, including the manufacturers and sellers of printed stationery.

For more than 10 years, the findings continue, the respondents have by agreement maintained an unlawful combination to suppress and eliminate competition in price in the sale of their products. Pursuant to such agreement, they have, among other things, fixed and maintained prices, terms, and sales conditions; refrained from selling to jobbers and subjobbers who fail to maintain prices and terms agreed upon; used espionage, coercion and cooperation in dealing with certain jobbers to enforce adherence to the prices agreed upon; given special inducements in price, and otherwise, to certain customers while denying such inducements to other customers; operated bogus independents under the sponsorship of the respondent American Sales Book Company, Inc., and certain other of the respondent manufacturers; and exchanged among themselves intimate details of particular transactions, including information as to prices, price lists, bids or price quotations.

Loomis Talc Corp. Opens New Mill

GOUVERNEUR, N. Y., September 14, 1942—Friday, September 4, marked the opening of the W. H. Loomis Talc Corporation's new Mill No. 3. This new mill, result of many years' experience in fine reduction, is considered to be outstanding in simplicity and design. Practically all old methods of production have been discarded and the most modern methods and machines have been installed.

It was over 20 years ago that W. H. Loomis, president of the W. H. Loomis Talc Corporation, put his first mill in operation. He sponsored a new system of separation which later revolutionized the talc industry and for the first time in the long history of the business made it possible for an electrical mill to successfully compete with water power.

This contribution to the talc industry has been improved through the years and Mill No. 3 will incorporate a system of highly specialized separation.

Urgent need for materials of war has curtailed further construction, but when fully completed this mill will produce a minimum of 150 tons daily. With the use of recently developed apparatus it will be possible for the first time to control within reasonable limits the chemical properties of the product and also the percentage of oil absorption.

Production will be governed by automatic weighing machines, accurate to less than one percent, which send a predetermined amount through the system. Anti-friction bearings are used throughout and pilot lights signal disruption of operation. Pioneering in dust control is much in evidence, and as soon as the proper materials are available each machine will be individually controlled by negative pressure.

Ask Reconsideration For Waste Liquor Plan

Wisconsin Sulphite Pulp Manufacturers Appeal To WPB To Permit Construction of Semi-Commercial Unit—Marathon Mills Doing Research On B-ribose Sugar from Waste Liquor—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 14, 1942—An appeal for reconsideration will be made to the War Production Board by the sulphite manufacturers of Wisconsin relative to the construction of a semi-commercial experimental unit for the treatment of waste sulphite liquor.

This decision was reached by the technical division of the Sulphite Pulp Manufacturers Committee on Waste Disposal, meeting all day Wednesday, September 9, at the Institute of Paper Chemistry, Appleton, Wis. The Institute is conducting research on various disposal and reclamation processes under the direction of J. M. Holderby, who represents the Wisconsin sulphite mills sponsoring and financing the project. Research chemists from a dozen mills were present, and Dr. Henry A. Rothchild of the Kimberly-Clark Corporation, Neenah, Wis., presided.

Authorization for construction of the unit at the Interlake Pulp and Paper Company division of the Consolidated Water Power and Paper Company at Appleton was sought recently from WPA, but the request was turned down because it would require utilization of essential war materials.

The appeal is backed by a willingness on the part of the mills to sacrifice from their present irreplaceable maintenance stock in order to insure continuance of the research designed to clear up the problem of stream pollution. The mills see enough progress towards solution of the age-old waste problem but, if successful, also will facilitate the early planning of a construction program which may be no small factor in aiding government efforts to combat post-war unemployment.

Even though the appeal may be fruitless for the time being, the research work will be continued along such lines as are possible at the present experimental unit in Appleton.

Technical developments accomplished recently were reviewed by the committee during its session, as explained by Mr. Holderby.

Students on Annual "Bush" Course

Eleven first-year students of the Institute of Paper Chemistry, Appleton, Wis., have left for Beachwood, Mich., to take their annual "bush" course at the University of Michigan camp. They will make a 10-day study of wood in actual forest practice through field trips. They will return to the Institute for the opening of classes September 16.

Enrollees and the institutions of which they are graduates are: Dexter Wolf of Appleton, Wis. and Richard C. Calkins, Racine, Wis., Lawrence College; C. Nevin Betts, Columbia, S. C., University of South Carolina; George E. Chamberlin, Des Moines, Iowa, Iowa State College; J. Wayne Dappen, Graettinger, Iowa, Grinnell College; Frank P. Maxey, St. Joseph, Mo., Marquette University; William G. McAllister, Sioux City, Iowa, University of Iowa; William H. McPherson, Jr., Pittsburgh, N. Y., Syracuse University; Sewell T. Moore, Weldon, N. C., University of North Carolina; Philip E. Nethercut, Wauwatosa, Wis., Beloit College, and Robert J. Welday, Pittsburgh, Pa., Allegheny College.

Research Under Way at Marathon Mills

Research is under way at the Marathon Paper Mills Company, Rothschild, Wis., for the recovery from sulphite liquor waste of the rare sugar known as D-ribose. This was revealed after the announcement last week by Dr. Jones Kamlet of the Miles Laboratories, New York City, to the American Chemical Society at Buffalo, N. Y., that a small fraction of the waste liquor from sulphite mills would supply all the world's needs. The sugar is required in making vitamin B-2, and until recently cost $18,000 per pound. Chemists at the mill point out that this rare sugar is present in the waste at the Rothschild mill, and recovery is being made on a theoretical basis.

Thilmany Nurse Recounts Health Benefits

Benefits accruing to the Thilmany Pulp and Paper Company, Kaukauna, Wis., as the result of its health program were pointed out by Mrs. Hazel Leedke, company nurse, in an address to the Kaukauna Rotary Club last week. This program, she stated, has reduced the days lost from illness 906½ days for the first eight months of this year as compared with last year, and has saved the workers about $5,000 in wages.

Twelve per cent of the mill population caused all lost time during the last year, the nurse declared, and only 9.9% of the time was lost due to industrial injuries.

During the last year 62% of the men and 26 per cent of the women were never absent from work.

Everything possible has been done to protect the worker with mechanical safety, Mrs. Leedke said, and attention is now being turned to the personal element and care of the worker's physical and mental well-being. This is being accomplished through education, particularly dental and vision surveys. It was found that 427 of the mill's 1,069 employees needed dental care and that 22.4% were found to have visual defects. The latter was found to be the cause of fatigue and nervous and physical disorders, which are contributory to accidents and lowered efficiency. A large per cent of these employees have had these defects remedied as the result of these surveys.

Redd-Robbins Nuptials

Dr. John Coleman Redd, technical chemical engineer for the Mead Paper Corporation, Chillicothe, Ohio, and Miss Doris Robbins of Green Bay, Wis., were married Friday afternoon, September 4, at the home of the bride's parents. Dr. Redd is a graduate of the University of Arizona and the Institute of Paper Chemistry at Appleton, Wis. His bride is a graduate of Lawrence College, with which the Institute is affiliated. The couple will reside at Chillicothe after a trip through northern Michigan.

Drawn for Division of Information, O. E. M.

"He carries me a block and I carry him a block. We save our rubber heels that way."

V-21-6/16

The above gentlemen may be "carrying things too far", but as long as rubber is scarce, it's up to us all to show the same spirit. In that way we'll be sure to get every ounce of service out of rubber covered rolls now operating or put in service in the future.

TO HELP YOU CARRY ON we have prepared bulletins on the best methods of storing, grinding, handling and operating rubber covered rolls. In addition, we will gladly furnish Roll Service Record Books which make it easy to keep track of grinding data and service life. Write today for a supply for your machine tenders and maintenance men.

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Curtailment of Power in Canada Criticized

Diversion of Power From Thorold Mill of Ontario Paper Co. Linked To Prorating Plan By Member of Provincial Parliament—Special Basic Pooling Fund Plan Provokes Serious Complaints.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 14, 1942—Another government regulation now being considered would provide Power Controller H. J. Symington with authority to designate what is termed "power shortage areas." In these areas the use of electrical power will be drastically restricted. It is expected drastic regulations governing the use of electrical power will go into effect Sept. 20, and meanwhile householders are being asked to conserve power wherever possible.

That the power controller will have no easy job is evident from the violent reaction to the curtailment of operations at the Thorold plant of the Ontario Paper Company. At a protest meeting of citizens of Thorold Tuesday night, E. J. Anderson, a member of the Provincial parliament said, "I am not entirely convinced there isn't some connection between the order to restrict power at the Ontario Paper Company and the efforts make some time ago to prorate production of paper at the mill. I'm not saying there is some connection, but I'm not convinced that there isn't."

One of the touchy problems confronting Newsprint Administrator Weldon, so far as individual paper companies is concerned, is working out the method whereby mills receiving additional business will compensate those curtailed or closed down owing to the power shortage. All that has been said about this was the announcement in Ottawa September 2, as follows:

Reports Creation of Pooling Fund

"A special pooling fund is being created into which mills which operate above a basic level will make payments, and out of which mills closed down or curtailed in their operations will receive payments in lieu of orders for newsprint."

Picking a basic level, without reference to the records of individual companies, is provoking complaints from some of the mills which have normally operated at close to capacity. They say the basic level proposal may be used to the advantage of some of the large companies which have had many mills operating around only 50 per cent. of capacity for a long time.

These complaints are not being voiced publicly, but are kept more or less behind the scenes. Those complaining recall the long record of agitation on the part of some of the leading paper companies to bring all Canadian mills under the pro-rating scheme used in the provinces of Ontario and Quebec, under which mills with plenty of tonnage on order would turn over some to mills with little business.

It is contended by some that much of this agitation has been directed against the Ontario Paper Company, owned by the Chicago Tribune and New York Daily News, which had steadily operated at close to capacity at its mills at Thorold and Comeau Bay.

Whereas prorating was an entirely voluntarily affair worked out by newsprint interests for their own benefit and confined to Ontario and Quebec, putting the industry under a controller with powers to arrange a special pooling fund, etc., and affecting all newsprint mills in Canada, is quite a different matter. With a newsprint man as administrator, the industry should be able to determine fairly what is to constitute the basic level.

Non-Prorating Mills Are Included

Several other paper mills in Canada are concerned chiefly with supplying newsprint to customers having financial interests in them. They were not subject to prorating, but all will now come under the basic level plan of wartime allocation. They include Bathurst Paper and Power Company, of New Brunswick (of which Newsprint Administrator Weldon has been president); Mersey Paper Company, of Nova Scotia; Pacific Mills, Ltd. and Powell River Company of British Columbia; Spruce Falls Power and Paper Company of Kapuskasing, Ont., in which the New York Times has a substantial interest; and the Great Lakes Paper Company of Fort William, Ont., in which a group of United States newspapers is interested.

There are many differences of capital structure between the various Canadian concerns. Ontario Paper Company, for instance, has no funded debt, while some of the other companies have substantial interest charges to pay. But authorities working out the allocation plan have taken the stand that it is impossible, at this time, to give consideration to production records, capital structure and other detailed differences between individual companies.

The announcement last week, through the minister of labor, that the Thorold mill would be allowed sufficient power to operate two of its five machines, came as a surprise, because reports had come from different sources, all usually quite reliable, that the newsprint mill was to be completely closed down Oct. 1, but would be permitted to use up its woodpile to make sulphite to fill contracts with a company making special paper for war use in the United States. There has been no suggestion of curtailment at the company's Comeau Bay mill, since it is well outside the war industry area, but this mill will come under the basic level formula, and, evidently, will have to pay into a pool for tonnage manufactured above the base level.

Canada's wartime economy has closed in on the pulp and paper industry. These highly important changes will reorientate the industry for the furtherance of the Dominion's war effort. The urgent need for more men for the armed forces and direct war work and necessity for diverting some of the electrical power used by the pulp and paper mills to the production of munitions and other war requirements, particularly aluminum, are the two chief factors motivating the government in interfering with the pulp and paper industry. The changes are of great import. Some mills may have to close down temporarily.

power to spare

For centuries Niagara Falls has inspired man with its ageless beauty and ceaseless power. Generation after generation has found it symbolic of the steadfast, dynamic way of life under which America has grown to its present stature. It is symbolic, too, that while power from Niagara has been harnessed to the will of man... to the production of mills and factories, to the creation of light and heat and energy... it still has a limitless volume of power to spare. Only a little of this great power has been used... as not all of the great potential power of America itself has been used.

America is a greater land of promise today than when the first pioneer saw a dream of the future in the mists of Niagara. New ways, new methods, new conceptions of how man may progress and expand under the doctrine of freedom can be seen today. The world will follow the steadfast, dynamic way of America to a new era. For the power of free men is as boundless as the power of Niagara — and as resistless as the flow of the river over its sharp cliffs.

We who work within sight and sound of Niagara Falls are devoting every ounce of our energies and facilities to speeding the flow of chemicals for Victory.

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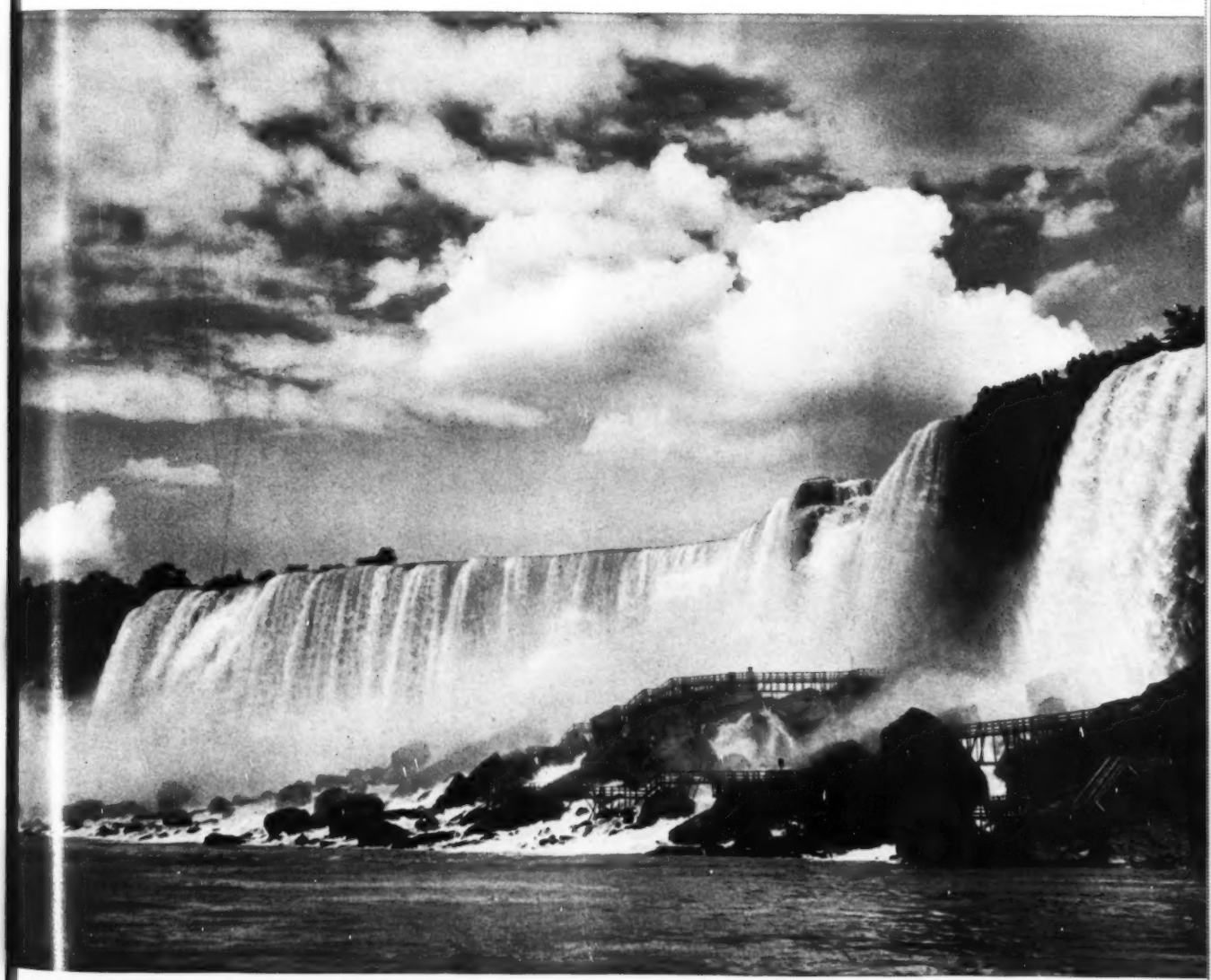


Niagara ALKALI COMPANY
60 EAST 42nd STREET, NEW YORK, N. Y.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 16, 1942 — The Government Printing Office has received the following bids for 4,828 pounds white 50% rag Litho-finish Chart Paper, 32 x 34; Franklin Research Company, 19.125 cents; Stanford Paper Company, 16.5 cents; Whiting Paper Company, 15.5 cents.

For 6,988 pounds white 50% rag 30 x 42 litho-finish chart paper; Franklin Research Company, 19.125 cents; Stanford Paper Company, 16.5 cents; Whiting Paper Company, 15.5 cents.

For 105,450 pounds of 50% rag, 36 x 44 white litho-finish chart paper; Franklin Research Company, 19.125 cents; Stanford Paper Company, 16.5 cents; Whiting Paper Company, 15.5 cents.

For 4,989 pounds of 50% rag, 25 x 30 white litho-finish chart paper; Franklin Research Company, 19.125 cents; Barton, Duer & Koch Paper Company, 14.75 cents; Stanford Paper Company, 16.5 cents; and Whiting Paper Company, 15.5 cents.

For 38,350 pounds of 50% rag, 36 x 48 white litho-finish chart paper; Franklin Research Company, 19.125 cents; Barton, Duer & Koch Paper Company, 14.75 cents; Stanford Paper Company, 16.5 cents; and Whiting Paper Company, 15.5 cents.

For 5,100 pounds of 50% rag, 38 x 53 white litho-finish chart paper; Franklin Research Company, 19.125 cents; and Whiting Paper Company, 15.5 cents.

For 22,350 pounds of 50% rag, 38 x 53 white litho-finish chart paper; Franklin Research Company, 19.125 cents; Barton, Duer & Koch Company, 14.75 cents; and Whiting Paper Company, 15.5 cents.

Whitaker Paper Company has been awarded the contract by the Government Printing Office to furnish 400,000 pounds of wood manila paper at 4.48 cents per pound. Other paper awards awarded by the Printing Office include the following:

Whitaker Paper Company will furnish 179,000 pounds of wood manila paper at 4.48 cents per pound; Lanston Monotype Machine Company, 16,700 pounds of monotype keyboard and casting machine paper at 14 cents per pound; Whiting Paper Company, 34,700 pounds of 25% rag white ledger paper at 15 cents per pound; Walker-Goulard-Plehn Company, 7,700 pounds of 50% rag white ledger paper at 13 cents per pound; Cauthorne Paper Company, 14,000 pounds of 50% rag white ledger paper at 13.35 cents per pound.

Walker-Goulard-Plehn Company will furnish 40,750 pounds of 25% rag yellow ledger paper at 10.96 cents per pound; they also will furnish 23,400 pounds 25% rag yellow ledger paper at 10.96 cents per pound; and 22,000 pounds of 50% rag yellow index paper at 11.72 cents per pound; and 21,000 pounds of 50% rag yellow index paper at 11.72 cents per pound.

Mudge Paper Company will furnish 23,400 pounds of 25% rag blue ledger paper at 11.06 cents per pound; and 38,400 pounds of 25% rag blue ledger paper at 11.06 cents per pound.

Stanford Paper Company will furnish 52,000 pounds of 50% rag white index paper at 11.235 cents per pound; 100,000 pounds of 50% rag white index paper at 11.235 cents; 43,100 pounds of 50% rag blue index paper at 11.735 cents per pound; and 66,300 pounds of 50% rag blue index paper at 11.735 cents per pound.

Aetna Paper Company will furnish 10,600 pounds of 25% rag salmon bond paper at 13.93 cents per pound; Aetna Paper Company will also furnish 117,400 pounds of 25% rag salmon bond paper at $16,353.82; R. P. Andrews, 25,626 pounds of poster Vac Cup Bac Paper at 7.35 cents per pound; Marquette Paper Corporation, 101,900 pounds of 25% rag white bond paper at 11.50 cents per pound; Marquette Paper Corporation, 308,000 pounds of poster paper litho finish at 5.97 cents per pound; Marquette Paper Corporation, 29,000 pounds of white machine finish book paper at 5.39 cents per pound; Whiting Patterson Company, 16,200 pounds of 25% rag yellow bond paper at 10.4 cents per pound.

Whiting-Patterson Company will furnish 14,600 pounds of 25% rag yellow bond paper at $1,518.40; and 80,800 pounds of 25% rag yellow bond paper at 10.4 cents per pound; 72,700 pounds of 25% rag yellow bond paper at 10.4 cents per pound.

Cauthorne Paper Company will furnish 28,300 pounds of 50% rag white ledger paper at $3,700.00; Marquette Paper Corporation, 146,250 pounds of white sulphite bond paper at $9,301.50; R. P. Andrews Paper Company, 108,756 pounds of white English Finish Book Paper at 5.65 cents per pound.

R. P. Andrews Company will furnish 57,375 pounds of white English finish book paper at 5.64 cents per pound; and 48,195 pounds of jute tag board at $5,253.26; and 1,990 pounds of tan bristol cover paper at 10.59 cents per pound; 625 pounds of tan bristol cover paper at 10.9 cents per pound; 952 pounds of tan bristol cover paper at 10.93 cents per pound; 598 pounds of tan bristol cover paper at 10.93 cents per pound; 1,171 pounds of tan bristol cover paper at 10.67 cents per pound; and 1,190 pounds of tan bristol cover paper at 10.59 cents per pound.

Marquette Paper Corporation, 9,975 pounds of tan bristol board at 10.5 cents per pound; Stanford Paper Company, 66,600 pounds of white water-resistant M. F. book paper, $10,609.38; Cauthorne Paper Company, 34,500 pounds of 25% rag white ledger paper, $4,209.00; Mathers-Lamm Paper Company, 950 sheets white sensitized paper at 3.5 cents per sheet; R. P. Andrews Paper Company, 288,000 pounds of white ground wood mimeograph paper, $13,939.20; Marquette Paper Company, 165,632 pounds of 25% rag yellow bond paper at 12.07 cents per pound; Mudge Paper Company, 239,000 pounds of white supercalendered book paper at 4.78 cents per pound; Paper Corporation of U. S., 84,500 pounds of tan bristol board at 8.75 cents per pound; Barton, Duer & Koch Paper Company, 4,800 sheets, $25.00; R. P. Andrews Paper Company, 2,000 sheets of 100% Kraft paraffine manila paper at 10 cents per pound; Fitchburg Paper Company, 46,000 pounds of buff sulphite writing paper at 6.12 cents per pound.

Marquette Paper Corporation will furnish 27,981 pounds of tan bristol cover paper at 10.70 cents per pound; Whiting Paper Company, 13,277 pounds of 25% rag salmon bond paper at 17.25 cents per pound; Barton, Duer & Koch Paper Company, 5,000 pounds of back lining paper for casemaking machines, 4.44 cents per pound; R. P. Andrews Paper Company,

94,450 pounds of white 50% rag index paper at 15.29 cents per pound; Mudge Paper Company, 16,300 pounds of 25% rag buff ledger paper at 10.57 cents per pound.

The Mudge Paper Company will also furnish 17,920 pounds of 25% buff ledger paper at 10.57 cents per pound; 10,920 pounds of 25% rag cherry ledger paper at 10.67 cents per pound; 16,300 pounds of 25% rag cherry ledger paper at 10.67 cents per pound; 17,920 pounds of 25% cherry ledger paper at 10.67 cents per pound; 23,400 pounds of 25% rag green ledger paper at 10.57 cents per pound; 40,750 pounds of 25% rag green ledger paper at 10.57 cents per pound; 10,920 pounds of 25% rag pink ledger paper at 10.57 cents per pound; 38,400 pounds of 25% rag green ledger paper at 10.57 cents per pound; 16,300 pounds of 25% rag pink ledger paper at 10.57 cents per pound; 17,920 pounds of 25% rag pink ledger paper at 10.57 cents per pound; 10,920 pounds of 25% rag salmon ledger paper at 10.57 cents per pound; 16,300 pounds of 25% rag salmon ledger paper at 10.57 cents per pound; and 17,920 pounds of 25% rag salmon ledger paper at 10.57 cents per pound.

Stanford Paper Company, 10,500 pounds of 50% rag buff index paper at 11.05 cents per pound; R. P. Andrews Paper Company, 4,380 pounds of white sulphite bond paper at $480.00; Collins Manufacturing Company, 7,800 pounds of 25% rag white ledger paper at $961.74; William W. Fitzbugh, Inc., 49,484 pounds of white sulphite writing paper at $3,810.27; R. P. Andrews Paper Company, 18,661 pounds of white super-calendered book paper at $1,033.82; Aetna Paper Company, 3,700 pounds of 25% rag yellow bond paper, $463.61; Aetna Paper Company, 11,800 pounds of 25% rag salmon bond paper, $1,647.28.

DIVERSION OF PULPWOOD LOGS

(Continued from page 13)

Ontario. The restrictions as announced for the Ottawa district apply to domestic consumers, where the use of electric heaters in homes will be banned and store window lighting reduced to a minimum. Stores will not be allowed to light their windows for advertising purposes and use of electric signs will be sharply curtailed. It is understood that all domestic consumers will be asked to decrease their use of electricity by a certain percentage and that consideration is also being given to reducing street lighting.

Howard Smith Heads Association

R. L. Weldon, who has been appointed newsprint administrator for the Canadian Government, has resigned the position of president of the Canadian Pulp and Paper Association, and to succeed him E. Howard Smith, vice-president of the Howard Smith Paper Mills, Limited, has been elected to the office, Mr. Weldon automatically becoming senior vice-president, on leave of absence, of the association. His duties will be performed by C. R. Whitehead, vice-president of the Consolidated Paper Corporation, who has been elected special senior vice-president.

F. G. Robinson, vice-president of Canadian International Paper Company, a past president of the Association, continues as one of the vice-presidents.

Mr. Smith is the son of the late Howard Smith, founder of the Howard Smith Paper Mills, Limited, and one of the originators and early presidents of the Canadian Pulp and Paper Association.

Sees Expansion in Forest Products

In a statement on the forest industry, G. Percy Burchill, president of the Canadian Forestry Association, says that the inventiveness of wartime is producing so many new and unexpected products from the shaft of a tree that Canada may well expect an upsurge in the use of her forests after the war.

"Plywood, through an ingenious invention is being moulded into airplanes of astonishing toughness and lightness," Mr. Burchell said.

One of the surprising features is that wood can be so treated as to displace steel for a multitude of purposes. This trend of wartime research and invention places an automatic premium upon every acre of forests now grown in this Dominion.

"As many far-sighted Canadians have pointed out, the logical and inevitable development of Canada must come through her forest resources.

"We have in this country a heritage of immense value in our spruce, balsam, pine, and the douglas fir and cedars of our Pacific coast, as well as our hardwoods. It represents a reservoir of raw material for continuous industry and employment.

"The most erroneous of ideas is that wood is being replaced by modern substitutes. This would make the forest resources a doubtful asset. The truth is that every acre of woodland in Canada is only now starting to come into its own, and that this country is only in the primary stage of forest growing and utilization.

"The one feature that is in a far too advanced stage is the forest fire."

Exporter Visits Strathmore Mill

Parsons & Whittemore, Inc., 10 East 40th street, New York, have been appointed exclusive agents for South and Central America of the Strathmore Paper Company, West Springfield, Mass. To acquaint the personnel of the distributors with Strathmore products, Eli de Vries, president of Parsons & Whittemore, Inc., accepted the invitation of Horace Moses, president of the Strathmore Paper Company, to visit the Strathmore paper mills.

The visiting group consisted of sixteen and comprised members of the Parsons & Whittemore South American department. The party stopped at the Strathmore Inn in Woronoco. A tour was made of the entire Strathmore mills. A feature of the trip was a surprise steak roast given by Mr. Moses on his country estate.

The remainder of the Parsons & Whittemore employees are expected to make a similar visit to the Strathmore mills at the end of this month.

Miami Division Meets Sept. 26

The Miami Valley Division of the Superintendents Association and TAPPI will hold its Annual Fall Meeting, Saturday, September 16, 1942, at the Elks Country Club, Hamilton, Ohio. The golf game will be sponsored by Black-Clawson Co.

The speaker of the evening will be Prof. William E. Smith, head of the history department at Miami University, who will summarize and analyze developments during the past year.

2 TO 4 TIMES LONGER OIL LIFE

ON REDUCTION GEAR AND TURBINE

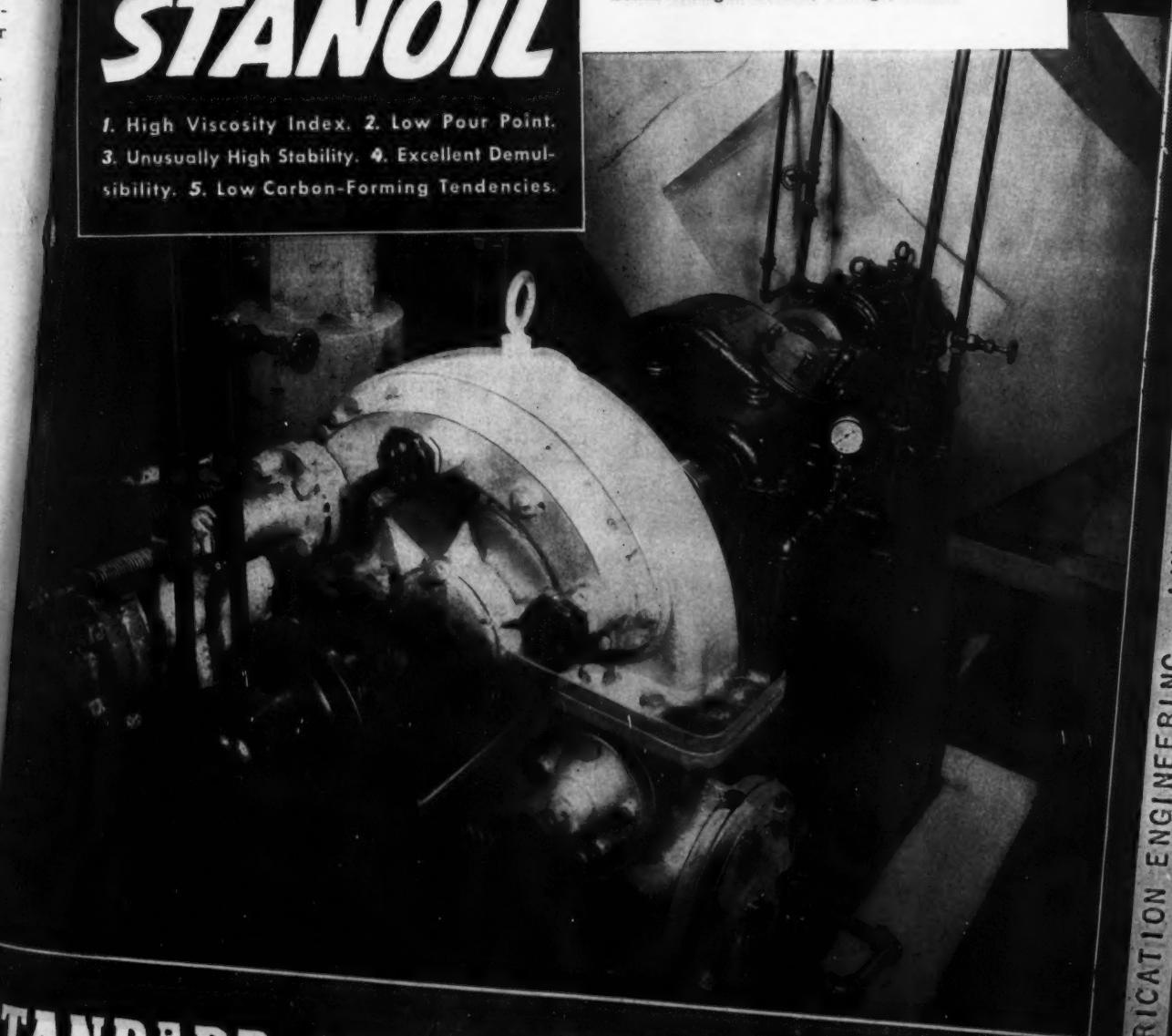
● SAVINGS in oil costs—just count them as incidental, if you wish. But think of the production time you'd save if your reduction gears and oil circulating systems could be operated two to four times as long before they needed cleaning.

A North Dakota power company found that it saved both time and money on the turbine and reduction gear pictured here. With a conventional turbine oil, sludge formed in the units every three to six months. Then, a fill of Stanoil was tried. It ran a full year before it was replaced. Even then, no deposits had formed and the oil was in good condition.

Discuss some of your maintenance problems with a Standard Lubrication Engineer. See if he hasn't a number of suggestions about lubrication that will help you cut down lost machine time. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago, Illinois.

STANOIL

1. High Viscosity Index. *2.* Low Pour Point. *3.* Unusually High Stability. *4.* Excellent Demulsibility. *5.* Low Carbon-Forming Tendencies.



STANDARD OIL COMPANY (INDIANA)

...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRI

Buffalo Pumps Get Army-Navy E

In an imposing ceremony at North Tonawanda, N. Y., the new joint Army-Navy Production Award was presented to the management and employees of Buffalo Pumps, Inc. The presentation was made by Rear Admiral Wat T. Cluverius, U. S. Navy, retired, and was accepted on the part of the company by Edgar F. Wendt, president of Buffalo Pumps, Inc.

Admiral Cluverius, in a stirring address, gave eloquent testimony to the part which production must play in the all-out fight against the Axis. "Side by side with men of the armed forces must be industry," he said. "American industry is the nation's strongest ally." More specifically, he declared that Buffalo Pumps, Inc., is considered among the U. S. Navy's strongest allies both in peace and war. Buffalo Pumps, the admiral pointed out, are doing service in every naval vessel taking part in the World War.

One of the highlights of the occasion was when Edward C. Lyons, oldest employee of the firm, received the Army-Navy "E" Pins in behalf of the hundreds of employees present, from the hands of Commander Robert S. Smith, Jr., of the U. S. Navy, and Lieut. Col. Charles F. Mosher of the Army.

"I pledge that we will continue to build the best pumps faster than ever before to speed American victory," said Mr. Lyons, as cheers and applause arose from the audience.

Upon acecpting the award, Mr. Wendt spoke briefly. He emphasized industry's solemn obligation to our armed forces. "We, the soldiers, marines and sailors of production," he said, "pledge ourselves to continue excellent production in order to back up the great work of the men on active duty."

The Army-Navy Production Award is a significant milestone in the long history of Buffalo Pumps, Inc. Since 1892 this company has devoted its every effort to the development of better, more efficient and dependable pumps. In 1920 the United States Navy placed this company on its approved list—one of a few manufacturers to enjoy this distinction. In World War I, hundreds of Buffalo Pumps served our ships in active service.

Since the Navy expansion program began in 1933, Buffalo Pumps, Inc., has devoted its ever-increasing production to help meet the needs for all types of pumps for armed and cargo vessels. Today, "Buffalo" is 100% at the command of our armed services.

Launches Key Kollection Kampaign

Today, September 17, the paper industry of America will launch its nationwide drive to collect old keys from every man, woman and child on this continent. From today until October 1, hundreds of thousands of ancient keys will take their first step in a flow toward fighting-metal. Net proceeds of the sale will be presented to the U. S. O.

When interviewed at his office in Grand Rapids, Mich., E. J. Durkin, president of the Paper and Twine Club, said, "Uncle Sam needs metal for guns, ships, and fighting machinery. He needs particularly nickel silver. 80% of the older flat keys are leaded nickel silver. The need for this metal is distressingly urgent. From the standpoint of dollar value to the U. S. O., a hundred pounds of nickel silver is worth as much as a ton of scrap iron.

"The paper industry, under the banner of the Paper and Twine Club, is going to dig up this valuable metal in the form of millions and millions of lowly, out-dated keys.

Our men of the paper industry are throwing their combined weight into this most vital drive, confident of its success. We are going to search every nook and corner of America for Victory Keys during the run of the campaign. This effort gives every living being in the U. S. A. a stirring opportunity to be a Key-Man and another glorious chance to help our fight for Democracy. 'Key Tokens for To-KEY-o!' is our motto during the next few weeks. We'll get those keys for Uncle Sam from every man.

"This morning the entire continent will be flooded with attractive Victory Key-Kans for collection purposes. There will be one wherever there are crowds, and it is hoped that every American citizen will do his duty by digging those old, yet valuable keys out of dusty corners and turning them into Victory metal for our fighting forces.

"Yes, our national Key Collection Campaign is an endless chain of benefit; metal for battle and money to help keep our fighters smiling."

Work of the Import Committee

Printed sheets for books, produced on India Bible paper, between 10 and 20½ pounds per ream have been held by the United States Customs Court to be properly dutiable at 2 cents per pound and 10 percent ad valorem. According to the Import Committee of the American Paper Industry, the importer claimed that the Tariff Act providing the India Bible paper rate for printed sheets did not apply to such sheets weighing 10 pounds or more per ream, but only to the lighter weights, and that the proper rate was 7½ percent ad valorem as books of foreign authorship. Several other cases, also involving the Oxford University Press as the importer, are pending on the same issue, the above decision having been made as a test of the law on this point. The importer is appealing from the decision.

Two cases at Detroit involved the dutiability of paper slightly over 35 pounds in weight and slightly over 4 points in thickness. The Court held the paper was dutiable and not duty free as standard newsprint, as claimed by the importer.

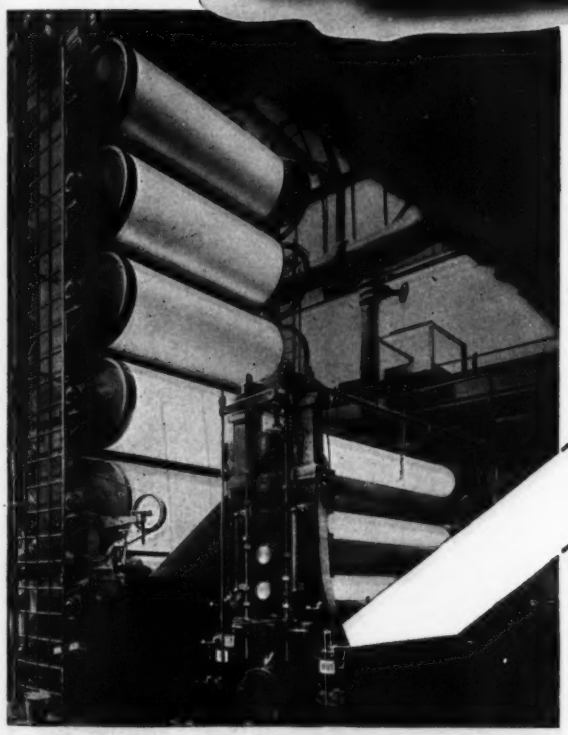
Bauer Bros. Get Army-Navy E

The coveted Army-Navy "E", symbol of efficiency in the execution of Government contracts, was awarded The Bauer Brothers Company and its employees Springfield, Ohio, on September 4, following a colorful presentation ceremony. Present were representatives of the Army-Navy Ordnance Department, city and state officials, honored guests, company officers, and the entire Bauer office and factory personnel.

The Army-Navy "E", is conferred by the services for quality and quantity of production in the light of facilities available. It was awarded Bauer Brothers in recognition of a resourcefulness and drive that enabled them to complete their first contract ahead of schedule although new equipment was received months later than expected. To revamp the plant facilities then available, to improvise all along the line, and at the same time cut a full month from the contract time was no mean accomplishment.

Methocel

DOW METHYLCELLULOSE



THIS SPECIAL SIZING IMPROVES RESULTS

ON THESE

8 POINTS

- ★ **TRANSPARENCY** and flexibility of sizing film.
- ★ **RESISTANCE** to fermentation and mold.
- ★ **IMPERVIOUSNESS** to oils, greases and fats.
- ★ **PENETRATION RESISTANCE** to ink solvents, paraffin and lacquers.
- ★ **SMOOTHNESS** of finish.
- ★ **FREEDOM** from fuzz.
- ★ **CHEMICAL INERTNESS** and heat resistance.
- ★ **UNIFORMITY** of sizing results.

Actual tests show that for paper sizing applications requiring special treatment METHOCEL* is a product that greatly improves results. Incorporated in this material are practically all of the desirable features necessary for a good sizing agent—convincing evidence that METHOCEL is an important contribution to the paper industry.

METHOCEL is Dow Methylcellulose. It is completely water soluble and exhibits desirable properties and characteristics not found in ordinary sizing materials.

Special information on specific application of METHOCEL at the size press or calender water box is available. Address inquiries to the Dowicide Division.

*Trade Mark Reg. U. S. Pat. Off.

Dow **THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN**

New York St. Louis Chicago San Francisco Los Angeles Seattle Houston

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending September 12, 1942

STOCKS

	High	Low	Last
A. P. W.	1¼	1¼	1¼
Armstrong Cork Co.	26½	26¼	26⅜
Celotex Corp.	6¼	6⅛	6⅛
Celotex Corp., pf.	69¾	69	69
Certain-Teed Products Corp.	1⅞	1¾	1¾
Certain-Teed Products Corp., pf.	25⅝	24½	25¼
Champion Paper & Fibre Co.	....	....	....
Champion Paper & Fibre Co., pf.	96	95	96
Congoleum Nairn Co.	16⅛	16	16⅛
Container Corp. of America	12⅜	12	12⅜
Continental-Diamond Fibre Co.	6⅛	6	6
Crown-Zellerbach Co.	11	10⅜	10¾
Crown-Zellerbach Co., pf.	84⅛	83½	83½
Dixie-Vortex Co.	8¾	8¼	8¼
Dixie-Vortex Co.—A.	36¾	35¼	35¾
Flintkote Co.	11⅝	10⅞	11
Robert Gair	1½	1½	1½
Robert Gair, pf.	8¼	8¼	8¼
International Paper Co.	8⅞	8	8
International Paper Co., pf.	47⅝	45⅜	45¾
Johns-Manville Corp.	58¾	56½	57¼
Johns-Manville Corp., pf.	....	....	....
Kimberly Clark Corp.	....	....	....
MacAndrews & Forbes	18	18	18
MacAndrews & Forbes, pf.	124¼	124¼	124¼
Masonite Corp.	26½	25¾	26½
Mead Corp.	6⅜	6¼	6¼
Mead Corp., pf.	66½	66½	66½
Paraffine Companies, Inc.	29¼	29¼	29¼
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	8¼	8¼	8¼
Rayonier, Inc., pf.	26	25¼	25⅞
Ruberoid Co.	....	....	....
Scott Paper Co.	35	34½	34⅝
Scott Paper Co., pf.	112½	112½	112½
Sutherland Paper Co.	21½	21½	21½
Union Bag & Paper Corp.	8	7¾	7¾
United Paperboard Co.	3	2⅞	2⅞
U. S. Gypsum Co.	52¼	51	51¾
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	12½	12¼	12½

BONDS

Abitibi Pulp & Paper Co. 5s '53	50	50	50
Celotex Corp. 4½s '47	98⅛	97⅜	97⅜
Certain-Teed Products Corp. 5½s '48	89¼	88⅜	89⅜
Champion Paper & Fibre Co. 4¾s '50	....	....	....
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	105	104¾	105
International Paper Co. 5s '47	103⅝	103⅜	103⅜
Mead Corp. 4½s '55	....	....	....
West Virginia Pulp & Paper Co. 3s '54	104	104	104

New York Curb Exchange

High, Low and Last for Week Ending September 12, 1942

STOCKS

	High	Low	Last
American Box Board Co.	3⅜	3⅜	3⅜
Brown Co., pf.	....	....	....
Great Northern Paper Co.	....	....	....
Hummel-Ross Fibre Corp.	3	3	3
National Container Corp.	....	....	....
St. Regis Paper Co.	1⅜	1¼	1¼
St. Regis Paper Co., pf.	108½	108	108½
Taggart Corp.	2⅞	2¾	2¾

BONDS

American Writing Paper Co. 6s '61	84	83½	84

St. Regis Issues Report

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., Sept. 14, 1942—Announcement is made that the business of the St. Regis Paper Company for the first four months of the year ran ahead of the 1941 level but since then there has been a decline. Sales for the first seven months are reported more than 5% greater than last year but net profit before taxes was only slightly ahead. After reserves and taxes, it appears probable that the year will show earnings below the $3,228,080 earned in 1941. The pulp production of the concern continues to run at capacity but the bag business has fallen off. However, part of the decline is said to be due to the fact that some customers have been reducing abnormally high inventories. New uses are now being developed for the multi-wall paper bags. Reduction in paper production for catalogues, telephone books, etc., appears probable.

The sales of the Taggart Corp., a subsidiary, for the first seven months are reported substantially higher than a year ago and net profit, before taxes, showed a sharper increase. At the present time, volume is below that of a year ago in line with the general trend in industry.

Complaint About Tax Assessments

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., Sept. 14, 1942—The Bagley & Sewall Company is among those filing a protest with the city in regard to the assessment of $595,000 on several buildings, claiming the amount excessive. The owner of the property, Abe Cooper, believes that the valuation of $220,000 placed on the office and vise shop is too high. He also complained about the assessments of $100,000 on his foundry, $200,000 on his machine shop, $40,000 on the roll shop and $35,000 on the old dam site and storehouse. It is probable that the city authorities will take favorable action on a number of the protests involving industrial concerns.

Heads Stowe-Woodward Inc.

Stowe-Woodward, Inc., Newton Upper Falls, Mass., announces the election of Embert W. Peterson as president to succeed the late Sherman B. Ward. Mr. Peterson was formerly vice-president of the company and prior to that was for a number of years assistant to the president. He is well known throughout the trade, having enjoyed a long and active association with Stowe-Woodward.

Champion Earnings Decline

The Champion Paper and Fibre Company and subsidiaries for the sixteen weeks to August 16, reports net profit, after provision of $1,775,200 for Federal income and excess profits taxes, was $486,478, equal to 58 cents a common share after dividends on preferred stock. For sixteen weeks to August 17, 1941, net profit was $690,425, or 95 cents a common share, after deducting $842,900 for taxes.

Harris-Seybold-Potter Nets $2.48

The Harris-Seybold-Potter Company for the year to June 30, reports a net income of $416,939, equivalent to $2.48 a share on 130,275 common shares, compared with $402,683 or $2.37 a share in year to June 30, 1941.

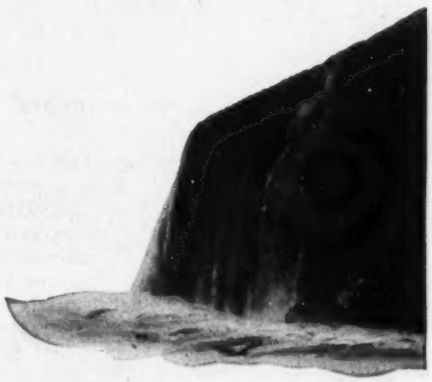
F. B. Tracy Heads Paper Division

[FROM OUR REGULAR CORRESPONDENT]

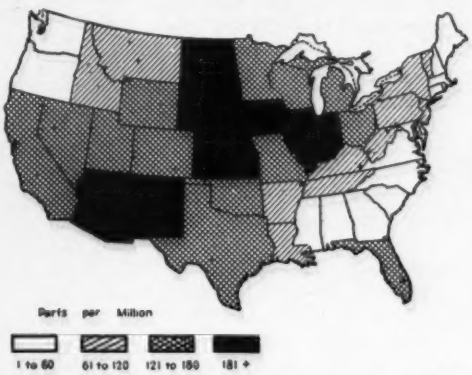
BOSTON, Mass., September 14, 1942 — F. Bendel Tracy, president-treasurer of the Fort Hill Paper Company, is chairman of the Paper Division of the Salvation Army Drive for Greater Boston.

Pure water supply? *There ain't no such animal!*

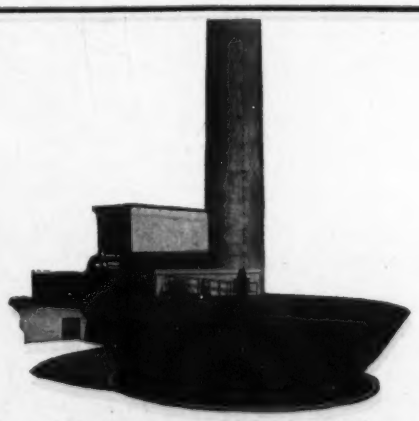
But here's how you can make one—



All "natural" water supplies contain harmful impurities that may seriously damage your product. Unpredictable variation in the quality of the water is a further hazard to the paper industries. That's why process water needs conditioning.



Wherever your plant is located, you can't escape water troubles. Map shows approximate average hardness, but conditions vary widely *within* states. And even where water is comparatively soft, it may contain iron, dirt, color, organic matter or other impurities.



Permutit* gives you complete control of process water quality. Modern Permutit equipment removes impurities from water, holds concentrations within the precise limits you require. Permutit insures a *uniform* supply of soft, clear, iron-free water.

FREE ADVISORY SERVICE

Permutit's staff of field engineers will be glad to help you plan a water supply "tailor-made" to your individual needs. Permutit's position as the world's largest manufacturer of water conditioning equipment, with 28 years of experience, assures you of expert and impartial advice. Write us about your problems or ask for free booklets. The Permutit Company, Dept. I2, 330 West 42nd Street, New York, N.Y.

*Trademark Reg. U. S. Pat. Off.

PERMUTIT

WATER CONDITIONING HEADQUARTERS

Interest in B. C. Log Exports

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., September 14, 1942—British Columbia is extremely interested in the contentious international interest which has developed over the export of hemlock logs from portions of the Western Canadian Province to the pulp mills of Puget Sound. A plan is being formulated at Washington, D. C., for a wartime policy designed to meet the needs of the state of Washington and the province of British Columbia in this respect.

Technically, there is an embargo on all logs from British Columbia because of the tremendous demand for all types of lumber in Canada, but actually this embargo has been enforced only with respect to Douglas fir, which is not a pulpwood species.

The provincial log export committee, composed of loggers and sawmill men and the chief forester, has control over export of timber from provincially licensed lands and it has resolutely declined all permits for several months except in very exceptional circumstances.

But a large volume of timber for export is available from crown grant lands and this is under the authority of the timber controller, who also has the power to override the provincial committee with respect to provincially licensed timber leases and exercised that right a few months ago, in defiance of the Provincial Government's protest.

Most of the 150,000,000 board feet of hemlock exported from British Columbia last year was from crown grant forest and authorized by the timber control office in Vancouver. The present embargo is subject to relaxation when special permits are issued by the Timber Control.

It is simply the old wartime industrial story of raw material shortage in the face of unprecedented demand. In British Columbia some pulp and paper mills have been compelled to curtail production because of an inadequate supply of logs, and their executives are inclined to blame heavy exports as one of the principal reasons for that situation. They point out that the total cut of hemlock in British Columbia last year was about 680,000,000 feet and that more than 150,000,000 feet was exported.

On the other hand, the American pulp manufacturers declare the shortage of logs which they are facing is even more acute and that continued imports from British Columbia are necessary if they are to maintain production. They say that British Columbia's timber resources should, in the present emergency, be regarded as a sort of international supply pool for mills on both sides of the border since, basically, the two countries are engaged in the identical job of beating the Axis by increasing production of essential goods in a minimum of time. They point out that their mills are operating largely on a lend-lease basis, much of their production going to Canada and the United Kingdom, and that the United States is freely shipping sulphur and chlorine and other ingredients of pulp and paper into this country despite shortage at home.

Because both sides have reasonable arguments to support their stand and because it is desirable to iron out all of sources of friction as soon as possible it was decided to take the issue direct to War Production Board officials at Washington, and Timber Controller A. S. Nicholson and Assistant-Controller D. D. Rosenberry, in charge of the Vancouver office, went East to represent Canada at a conference aiming at establishment of quotas on a "good neighbor" basis.

LaMotte Service to the Paper Industry

ph Control—Boiler Feed Water Control

Chlorine Control

Standard routine tests developed by LaMotte Research Department Promote Better Control of Processes.

pH Control

in the Beaters
in the Sizing
in Filling, Coating and Coloring
in eliminating Deposition of Pitch on wires, rolls and felts
in White water recovery
in Quality of Mill Water Supply
in Finished Paper

Chlorine Control

in Treating Mill Water Supply, etc.

Boiler Feed Water Control

Simplified Outfits for Controlling Treated Water or in Analyzing Untreated Water for: Total Alkalinity, Chlorides, Dissolved Oxygen, Hardness, Phosphates, pH, Sulphates, etc.

Send for further information.

LaMotte Chemical Products Co.

The Pioneers in the Practical Application of pH Control

Dept. PT Towson, Baltimore, Md.

Adopts War-Time Package

HERSHEY, Pa., September 14, 1942—William F. R. Murrie, president of the Hershey Chocolate Corporation, announced the introduction of a new war-time paperboard container to replace the familiar tin-plated steel container used for years in the packaging of pound and half-pound units of Hershey's cocoa.

Adoption of the new container, Mr. Murrie estimates, will release annually for war production uses at least 7,500 tons of steel, more than 200,000 pounds of block tin and large quantities of aluminum, all highly-critical metals.

At the same time the design of the package has been improved to give it greater shelf visibility. The new color scheme is white lettering, instead of aluminum, against a maroon background. This is also a metal-saving-move.

The new container was developed by I. H. Slesser, general purchasing agent for the Hershey Chocolate Corporation, in collaboration with the Container Corporation of America. It is filled and handled by the same automatic machinery used for the former tin containers, which made it unnnecessary to go out into the market for new equipment, Mr. Murrie said.

In addition to the substantial savings in steel, tin and aluminum made possible by the adoption of the new package its use also will release considerable freight capacity to war industries. This is because the new paperboard containers weigh much less than the former tin containers. Mr. Murrie estimated a year's supply of the new packages would call for 5,000 less tons of freight capacity.

The new paperboard package is fitted with a special lining designed to retain the fresh cocoa flavor and keep the product over long periods in its newly-packaged condition.

Use Corrugated Paper as Rubber

Corrugated paper in layers may be used as a rubber substitute, individual munitions manufacturers in England are discovering. The resilience of the corrugated strips effectively absorbs shocks, says an unofficial report to the government here.

Growing use of the paper pads came about through the recent British exhibition "Waste Paper Goes to War." Hope is expressed that the strips can be more extensively used in protecting various types of munitions.

CONSTRUCTION NEWS

Under limitations order L-41 all projects involving expenditures of more than $5,000 must be specifically approved by the War Productions Board. The status of projects reported herewith under the provisions of the order is not known.—EDITOR.

Chicago, Ill.—Multi Products Company, 1920 South Western avenue, manufacturer of wood fiber specialties, has leased a one and part two-story industrial building at 820-30 West 36th street, owned by Gambill Motor Company, Inc., and will occupy for expansion. Present plant will be removed to new location and capacity increased.

Pittsburgh, Pa. — Armstrong Cork Company, 24th street, manufacturer of insulating board products, has completed plans for new addition to local plant. General erection contract has been let to Martin & Nettrour Contracting Company, Pitt Bank Building, Pittsburgh, and work will be placed under way at once.

New Haven, Conn.—The Clogston Paper Box Company, Inc., recently chartered, plans operation of local plant for the manufacture of a line of paper boxes and containers. New company is headed by Walter J. Clogston, New Haven, and associates.

Glendale, Calif.—The Sunset McKee Salesbook Company, 900 Allen street, manufacturer of commercial paper products, has approved plans for addition to plant, to be used primarily for storage and distribution. General erection contract has been awarded to J. F. Cummins, 245 East Olive avenue, Burbank, Calif., and work will be placed under way at once. J. A. Murray, 5125 West Park drive, North Hollywood, is achitect.

Menasha, Wis. — The Marathon Paper Mills Company, Menasha Products Division, manufacturer of waxed and other processed paper stocks, has work under way on new addition for extensions in machine department, recently referred to in these columns, and will push construction to early completion. Edward H. Meyer Construction Company; 75 Main street, Oshkosh, Wis., has the general erection contract.

Detroit, Mich.—The Republic Aircraft Products Division, Aviation Corporation, 5914 Federal street, has approved plans for one-story addition to plant for paper storage service, to handle material used in general production. General erection contract has been let to R. H. Hidey, Inc., 270 St. Aubin street, Detroit. H. E. Beyster Corporation, General Motors Building, is achitect and engineer.

Hoquiam, Wash.—Rayonier, Inc., 343 Sansome street, San Francisco, Cal., manufacturer of bleached sulphite pulp, is maintaining production on a capacity schedule at its mills at Hoquiam, Port Angeles and Shelton, Wash., with full working quotas at all plants. During the quarter year ended July 31, the plants developed a gross output of 97,924 tons of pulp, as compared with 91,880 tons in the same period in 1941. The company is giving over an increasing part of mill output to dissolving pulp. Present operations are expected to be continued for an indefinite period.

Milwaukee, Wis.—The Milwaukee Lace Paper Company, 1306 East Meinecke avenue, manufacturer of lace papers and other special paper products, has concrete work in progress on new addition to plant, previously referred to in these columns, and is awarding a number of subcontracts for finishing work for structure. It will be used for increased capacity at mill, and is reported to cost over $60,000, with equipment. Building will be ready for service during the fall. Scholtka Brothers, Inc., 3600 West Silver Springs drive, Milwaukee, has the general erection contract. Charles F. Smith, 717 North Sixty-fifth street, Wauwatosa, is architect.

Thorold, Ont.—The Ontario Paper Company, Ltd., manufacturer of newsprint, mill wrappers, etc., has completed plans for new addition to mill. General erection contract has been awarded to Aiken & McLachan, Ltd., 9 Queen street, St. Catharines, Ont., and is scheduled to be placed under way at early date.

Cellulose Bottle Hoods for Aircraft

Cellulose bottle caps are now being placed to a new service in connection with aircraft production, being used to protect the open ends of fuel and hydraulic pipe lines, and other pipes and tubes during assembling and shipping of planes. The hoods are being made from wood pulp by a process similar to that used in the manufacture of cellophane and viscose process rayon at the plant of E. I. duPont deNemours & Company, Inc., River road, Buffalo, N. Y., in large quantity. Protecting the open ends of such piping and tubing from dust and dirt, the cellulose hoods are replacing such critical materials as cork, rubber and metal, previously used for this service in aircraft manufacture. The units are being produced in a bright red color to be easily seen, eliminating any danger of being overlooked and left in place during final assembling prior to flight.

Charles H. Baxter Jr. Honored

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 14, 1942—Completing a half-century of loyal and faithful service, Charles H. Baxter, Jr., manager and buyer of the envelope department of the Sorrs & Bement Company, was honored September 8. The McQuillan Associates, an employees' organization, presented Mr. Baxter with a War Bond, and the company presented him with a Fifty-Year Service Pin, together with a gift of money. W. N. Stetson, Jr., president of the company, made the presentation, which took place on the first floor of the office of the company at 282 Congress street, in the presence of the staff. Mr. Baxter, who entered the service of the company September 7, 1892, has seen many changes in personnel and management.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

Vol. 115 September 17, 1942 No. 12

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, Asterica Hotel, Kalamazoo, Mich.

Technical Association of the Pulp and Paper Industry, Fall Meeting, Statler Hotel, Boston, Mass., September 29-October 1.

INFLATION AND TAXATION

A fiscal policy to meet the extraordinary current requirements of the nation should prevent inflation. An adequate taxation plan should raise the required revenue. These considerations appear so obvious and highly important that it seems strange that so little has been accomplished to achieve them. As the present and proposed fiscal policy and taxation plans fall far short of their objectives, the Administration and Congress have been and continued to be subject to severe criticism. It is extremely difficult to even partially solve the problems of inflation and adequate revenue. But it is clear that much more must be speedily done to keep prices at even a moderately high level, and pay the huge and rising war expenditures in large part out of current income.

In a study made by the Tax Foundation, 30 Rockefeller Plaza, New York, it is shown that no revenue proposed even now before Congress is adequate either to a sound fiscal policy or as a safeguard against inflation. At least an additional 110 billion of taxes is needed,—$4 billion more than is recommended by the House revenue proposals now being considered by the Senate. Both England and Canada are meeting over 50% of their total expenditures with current tax revenue. The United States, however, under present proposals will pay less than 30% of 1943 war expenditures in taxes. These and other significant conclusions are brought out by the data presented in "Facts and Figures on War Finance," a study in booklet form compiled by the Tax Foundation. Designed to contribute to needed debate and consideration of war finance and to clarify the problem and the facts which relate to it, this publication of charts and tables presents a graphic picture of national income and expenditures, federal taxes, expenditures and debt, corporation income, war bond sales and cost-of-living index.

According to *Facts and Figures*, the United States should collect in 1943 taxes at least 40% of total expenditures, or $29 billion. Business-as-usual sources of revenue are already yielding just about their limit, and the only remaining source is a broadened tax base which would tap the bulk income of the country, the lower brackets into which 80% of the nation's income flows. The income in those brackets, the study points out, represents the great inflationary surplus,—the surplus, mass buying power which can bid up the prices of increasingly scarce consumer goods and start the course of an inflationary spiral which may not be possible to control. One striking fact revealed by the study is that if all net incomes over $5,000 were confiscated in 1941 it would pay for only 48 days of the war.

The study indicates that on the assumption that the full amount of the $222 billion of war expenditures now authorized will be expended, that even if 40% is collected in taxes, the federal debt on June 30, 1945 will amount to over $225 billion. This is equivalent of a debt of $7,000 for every family of four in the United States. In the fiscal year, 1942, the national income reached a net figure of approximately $104 billion, an increase of 10% over the calendar year 1941, and nearly one-fourth more than the previous record year of 1929. Despite an increased national income, war expenditures are requiring more and more of our productive facilities. It is estimated that by the time the peak of our production is reached in 1944, the national income figures will rise to $120 billion and that about 60% of our total production will be devoted to winning the war. Only about 40% of our production will be devoted to civilian needs.

Pointing out that the cost of this tremendous war effort can be met only by taxes and borrowing, the study states that the major objectives of war taxation to be, first, obtaining the maximum revenues to reduce the amount of borrowing, and second, avoiding inflation. Each of the present sources of income is analyzed from the viewpoint of its revenue possibilities and its effect on inflation. The corporation tax of $10 billion, under present proposals, is the approximate limit that can be expected from this source. While it is essential to the raising of revenue, it has almost no influence on consumer spending and has therefore no effect on inflation. Other sources of taxation are the personal income and sales taxes. Either direct or indirect taxation must be relied upon to meet the additional tax requirements. Taxes which draw off excess income or increased purchasing power due to the pouring out of billions of dollars in the war effort, largely in the form of wages and salaries, are an important factor in curbing inflation.

Huge borrowings, the study points out, involve

real risks, but the methods used can reduce these risks. If the government borrows directly from the people, as, for instance, through the sale of war savings bonds, then the danger of inflation is lessened, since the current income of the people is reduced. To the extent that the government borrows directly from the commercial banks, it makes more money available for private spending and thus increases the danger of inflation. Price ceilings alone are powerless to stop inflation. Inflation can be halted only by a combination of rationing, price controls, wage stabilization, control of prices for farm commodities, forced savings and widespread taxes on income.

Consolidated Installs Generators

Two of the generators in the power plant of the Consolidated Water Power and Paper Company's new dam on the Wisconsin River near Knowlton, Wis., have been installed and will be ready for operation about September 15. Arrangements are now being made to raise the water level in the vast reservoir an additional three to four feet in order to propel the generators, and it may be necessary to await fall rains before this can be accomplished.

The two generators now installed will develop 3,200 kilowatts at full head, and when the four contemplated are all installed, the total production will be 7,200 kilowatts. The plant will be one of the largest hydro-electric units on the Wisconsin River, and will supply power to Consolidated mills, in addition to the company's offer of additional capacity to defense plants.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1942		Corresponding Weeks—1941	
August 1	81.0	August 2	100.5
August 8	81.6	August 9	99.7
August 15	79.8	August 16	99.0
August 22	80.5	August 23	102.8
August 29	82.8	August 30	102.4
September 5 (Prelim.)	*83.2*	September 6	84.8

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1941	85.6	89.7	92.2	96.0	98.7	99.3	94.2
1942	104.5	103.9	102.9	100.3	95.4	87.3	75.8

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1941	101.0	99.7	105.2	106.2	100.4	97.4
1942	*81.2*	....	....	....	....	....

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941	1942
Year to Date	68.5	78.1	86.9	69.0	78.9	86.7	94.2	*93.4*
Year Average	69.9	80.4	79.8	71.5	83.4	85.6	97.4	...

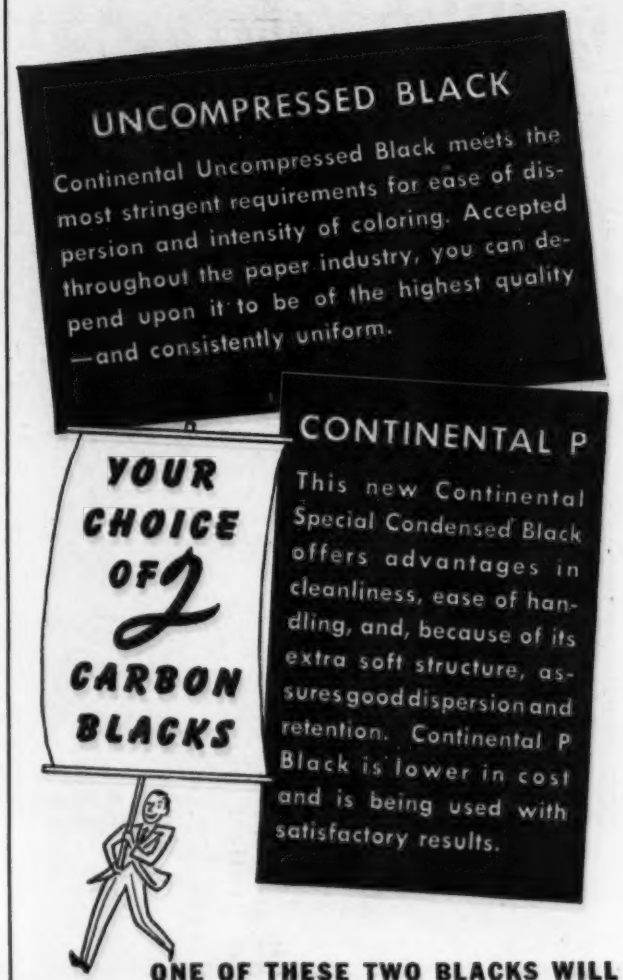
* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1937	83	89	89	91	88	80	69	77	72	70	57	47	75
1938	56	63	63	60	60	59	59	60	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	..	..	..	..	..

Week ending Aug. 1, 1942—76
Week ending Aug. 8, 1942—75
Week ending Aug. 15, 1942—73
Week ending Aug. 22, 1942—74
Week ending Aug. 29, 1942—77
Week ending Sept. 5, 1942—*78*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.


UNCOMPRESSED BLACK
Continental Uncompressed Black meets the most stringent requirements for ease of dispersion and intensity of coloring. Accepted throughout the paper industry, you can depend upon it to be of the highest quality —and consistently uniform.
CONTINENTAL P
This new Continental Special Condensed Black offers advantages in cleanliness, ease of handling, and, because of its extra soft structure, assures good dispersion and retention. Continental P Black is lower in cost and is being used with satisfactory results.
YOUR CHOICE OF 2 CARBON BLACKS

ONE OF THESE TWO BLACKS WILL BEST MEET YOUR SPECIAL REQUIREMENTS

Is the carbon black you are using the right black for your products and processes? You cannot be sure until you have made tests and comparisons. Continental gives you a choice of two types—each produced to be used under different conditions and for different purposes. Continental Uncompressed Black will give more satisfactory results in certain cases, Continental P in others. Our staff will be glad to cooperate with you and help you determine which is best for your particular needs.

Continental specializes exclusively in the production and servicing of carbon black. A pioneer in introducing new and better methods of control, it has been responsible, in a great measure, for the constantly rising standards of quality found in this product. You are invited to take advantage of the experience of our technical staff in using Continental Carbon Blacks.

Continental CARBON BLACK

CONTINENTAL CARBON COMPANY, 295 Madison Ave., New York, N. Y
Akron Sales Office: Peoples Bank Bldg., Akron, Ohio

SALES REPRESENTATIVES: Ernest Jacoby & Co., Boston, Mass. • Marshall Dill, Los Angeles and San Francisco, Cal.

FOR *Effective* SLIME CONTROL

MORE and more pulp and paper mill operators are turning to Du Pont "Lignasan" for quick and efficient slime control. They find that "Lignasan" helps to avoid clogged pipes, slime masses on screens and wires and deterioration of stock in storage chests, when due to decomposition by bacteria or fungi.

To control slime from the beaters to the paper machine, the usual method is to apply "Lignasan" in the beaters; only 3 ounces to 5 ounces per ton generally is ample. At some operations, it may be preferable to bleed the "Lignasan" solution into the stock chest.

"Lignasan" contains one of the most powerful fungicides and bactericides known, which makes it highly effective in low concentrations. It is easy to handle and apply—can be prepared as a concentrated stock solution or a paste so that the proper dosage can be quickly and accurately measured.

SLIME CONTROL IN WHITE WATER SYSTEMS—Slime occurring in the white water system usually can be controlled by bleeding "Lignasan" solution into the system near the point where slime formation is heaviest. Good results in unbleached sulfite pulp systems are being obtained by adding "Lignasan" solution at the knotter screens or rifflers.

CONVENIENT—"Lignasan" is convenient to use in regular operations and is easy to handle either as a slug dose in dry form or from stock solution. Applicators for bleeding the solution into the system can be made in your own shop. Write for complete details on specific applications: E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington, Delaware.

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

A Further Comparison of Sodium-and Calcium-Base Sulphite Acids

By M. O. Schur[1] and R. E. Baker[2]

Abstract

The comparative merits of calcium-base, sodium-base, and mixed calcium- and sodium-base sulphite cooking acids in the preparation of pulp from a mixture of red spruce and balsam fir, and from each species separately, have been investigated in the laboratory. With each species and with each acid the degree of cooking as measured by permanganate number was varied by means of a change in the cooking time. When, with cooking acids containing 1.0% combined SO_2 and 5.0% free SO_2, the same temperature-rise schedule was used, a given degree of cooking was obtained with sodium-base acid in a shorter cooking time than with calcium-base acid. Slightly higher pulp yields were obtained with the sodium-base acids, and the difference in pulp yield was found to depend on species and degree of cooking.

The effect of varying the degree of cooking, as measured by permanganate number, upon the pulp beating characteristics and other pulp properties was determined for each of the acids.

According to a standardized beating test, the bursting strength increased and the tearing resistance decreased with a decrease in the degree of cooking. This was true for the bleached as well as the unbleached pulp from both species of wood. At a given permanganate number of the raw stock, the pulps cooked with the sodium-base acid tended to develop a higher bursting strength and lower tearing resistance in a

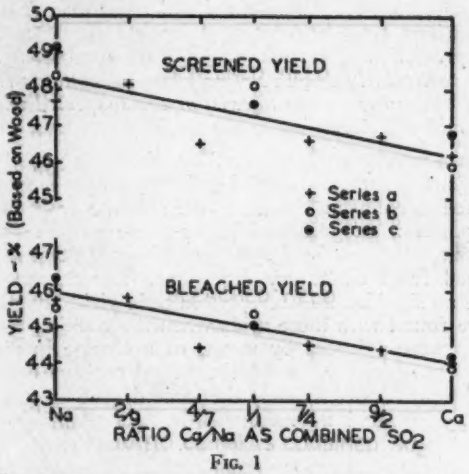

FIG. 1
Effect of Type of Base on Yield of Screened Unbleached and Bleached Pulp

[1]Member TAPPI; Director of Research and Development, Brown Company, Berlin, N. H.
[2] Research Chemist, Brown Company, Berlin, N. H.

TABLE I

Cook	Base, Ca/Na, as SO_2	Max. Temp. deg. F.	Screened Yield %	$KMnO_4$ No.	Raw Stock Beaten 50 Min. Slowness	Burst.	Tear	Total Bleach (as Cl₂), %	Brightness (G.E.), %	Bleached Pulp Yield, %	Bleached Pulp Beaten 50 Minutes Slowness	Burst.	Tear	Beater Value *
Series a. Chip Sample A—Electrically-heated, rocking digesters; water and nitrogen injected.														
685	Na	283	47.7	10.7	5.8	148	190	5.11	87.5	45.7	5.6	138	191	467
681	2/9	282	48.1	13.7	6.2	150	174	6.40	86.6	45.8	5.8	142	187	471
682	4/7	284	46.5	12.0	6.3	145	174	5.65	86.2	44.4	6.4	134	187	455
683	7/4	290	46.6	12.4	5.5	140	192	5.44	87.0	44.5	5.0	128	197	453
684R	9/2	293	46.7	13.0	5.5	134	194	5.48	86.5	44.4	4.8	125	208	458
686	Ca	295	46.2	10.5	5.4	132	194	4.86	88.1	44.0	5.7	123	204	450
Series b. Chip Sample B—Electrically-heated, rocking digesters; water and nitrogen injected.														
957	Na	280	48.4	13.1	8.1	159	166	6.16	88.6	45.5	10.2	143	155	441
958	Na	280	48.3	10.3	7.0	159	163	5.16	90.6	45.5	8.3	136	162	434
982	1/1	286	48.1	14.9	5.6	157	158	6.44	87.2	45.4	7.9	139	161	439
983	1/1	286	48.2	14.5	6.1	161	155	6.21	86.5	45.3	8.1	142	161	445
986	Ca	288	46.0	14.5	6.8	151	165	6.36	87.6	43.8	6.5	129	167	425
987	Ca	288	45.9	14.1	7.6	153	157	5.95	88.4	44.0	8.6	130	158	418
Series c. Chip Sample B—Stationary digester, with external circulation; no water or nitrogen injected.														
812	Na	275	48.4	12.6	9.4	163	161	7.42	86.0	45.6	12.5	150	165	465
813	Na	275	49.2	14.6	9.1	156	143	6.11	87.6	46.1	12.0	134	157	423
878	Na	275	50.4	13.2	9.4	145	161	6.75	87.2	47.4	10.7	149	149	427
828	1/1	282	46.6	13.7	8.8	159	166	6.59	88.1	44.3	9.7	140	162	442
830	1/1	282	49.7	15.5	12.4	161	146	7.52	85.1	46.7	11.5	150	147	447
876	1/1	282	46.7	13.1	8.5	156	150	7.04	88.4	44.4	10.0	142	154	438
857	Ca	288	46.5	12.4	8.7	150	169	5.49	87.4	43.7	7.5	130	183	443
870	Ca	288	47.0	13.4	8.2	153	168	6.13	88.6	44.5	9.8	134	150	426

* "Twice the bursting-strength plus the tear" is an arbitrary but useful composite strength factor.

normal milling time than did the pulps prepared with the calcium-base acid.

Pentosan and viscosity tests on the unbleached pulps indicated that there was less degrading action on the pulp with a sodium-base acid than with a calcium-base acid when cooking was carried to a given permanganate number.

The slight increase in pulp yield obtained in these small-scale cooks by the substitution of sodium-base acid for a part or all of the calcium-base acid in the preparation of sulphite pulp from red spruce or balsam fir was, in itself, not large enough ordinarily to justify the higher cost of the base, but other factors, such as the faster rate of cooking with a sodium-base acid and the fact that many properties of a sodium-base pulp of a low bleach requirement were similar to those of a calcium-base pulp of a relatively higher bleach requirement, might, under some circumstances, make the use of a sodium-base or mixed sodium- and calcium-base cooking acid more interesting from the practical point of view.

Laboratory results obtained under uniform cooking conditions must be interpreted with extreme care in the prediction of results involving commercial digesters, particularly when relatively large deviations from uniformity are known to exist or are suspected within the mill digesters.

In a previous paper *(1)* the authors discussed the comparative merits of calcium-base, sodium-base, and mixed calcium- and sodium-base sulphite acids in the preparation of bleached paper-grade sulphite pulp from a mixture of red spruce and balsam fir as determined from laboratory digestions. It was reported that no significant differences in pulp yield or quality were found with these acids when the cooking conditions were adjusted by means of a change in maximum temperature, to give in a total cooking time of 9.75 hours approximately the same degree of cooking with each acid as measured by the permanganate number of the unbleached pulp. It was pointed out, however, that when the same cooking conditions were used with each acid, the pulp obtained with the sodium-base acid had the lowest bleach requirement;

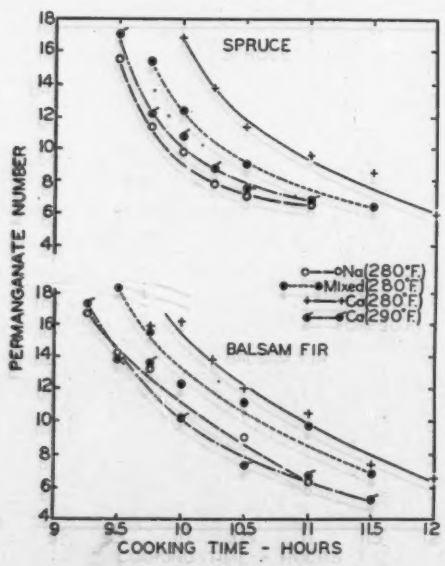

FIG. 2
Effect of Cooking Time on Permanganate Number

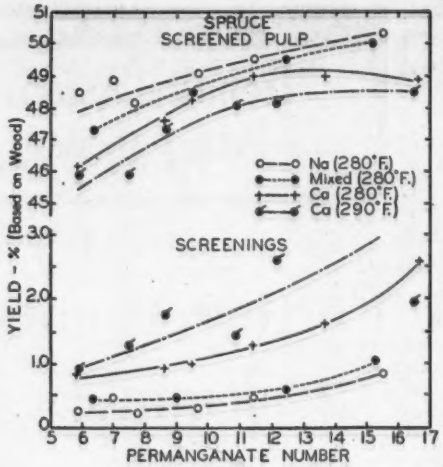

FIG. 3
Effect of Varying the Permanganate Number on Yield of Unbleached Pulp from Spruce

or, to obtain a pulp with a given bleach requirement, milder conditions, in this case a lower maximum temperature, were possible with the sodium-base acid than with the calcium-base acid. From the laboratory results obtained, it appeared that the saving in steam or cooking time which could be effected by the substitution of sodium-base acid for a part or all of the more usual calcium-base acid would not ordinarily justify the increased cost in chemicals.

More recent work, involving several different samples of mill chips of the kind used in the first study, has indicated that the original observation on pulp yield may not be general. In the case of these later laboratory cooks, made with the same equipment and procedures, the difference in yield of screened, unbleached pulp, and of bleached pulp (based on wood) was approximately 1.5 to 2.0% higher for the sodium-base cooking acid than for the calcium-base acid. The yields were slightly higher for the sodium-base acid and slightly lower for the calcium-base acid than were obtained with the corresponding acids in the previous study. In the case of the mixed-base acids the differences in pulp yields, in these later cooks, were proportionate to the ratio of calcium to sodium.

The more recent data are given in Table I, and the yield values are shown in Fig. 1.

In Series a and b the same equipment and procedures described in the previously reported work were used. In Series c, however, the digester em-

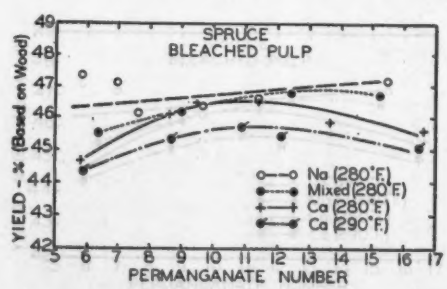

FIG. 4
Effect of Varying the Permanganate Number on Yield of Bleached Pulp from Spruce

TABLE II.—TEMPERATURE AND PRESSURE SCHEDULES

Time, hr.	280 deg. F. Max. Temp. Temp., deg. F.	280 deg. F. Max. Temp. Press., p.s.i.	290 deg. F. Max. Temp. Temp., deg. F.	290 deg. F. Max. Temp. Press., p.s.i.
0	70	0	70	..
1	108	..	108	..
2	145	..	145	..
3	183	..	183	..
4	220	..	220	..
5	240	..	243	..
6	258	85	263	85
7	271	85	279	85
8	280	85	290	85
9	280	85	290	85
10	280	61	290	67
10.5	280	49	290	58

Digester Charge: 4500 grams chips (moisture-free basis).
19 liters acid.
5.10 ± 0.10% free SO_2.
1.00 ± 0.02% combined SO_2, unless otherwise stated.

ployed was stationary and provided with an acid circulating pump as described by Koon and Keepers *(2)*. In this last series neither water nor nitrogen was added to the digester during the period of temperature and pressure rise, as was previously done in an attempt to follow more closely conditions in a mill using direct steaming. The yield values, which are plotted in Fig. 1, show that regardless of experimental procedure or equipment employed, the same relation of pulp yield to kind of base used was obtained.

As shown in Table I, the pulps, after being beaten 50 minutes according to a standardized ball mill procedure, had a lower bursting strength and slowness value, but slightly higher tearing resistance when calcium-base cooking acid was used than when sodium-base acid was used. This difference was more pronounced in the case of the bleached pulps. These results confirm those previously reported.

In order to investigate further the comparative merits of the cooking acids in the sulphite pulping of spruce and fir, especially with regard to pulp yield, additional work has been carried out; however, instead of a mixture of the two species, each has been studied individually. Also, in order that small differences in bleachability may not confuse the comparison, with each species of wood and with each type of acid a series of pulps with different permanganate numbers was prepared. This was accomplished by varying the cooking time.

Procedures and Materials

Four series of cooks were made with each species

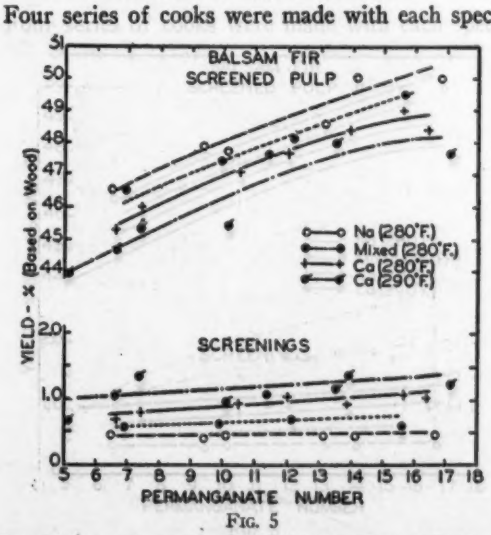

FIG. 5

Effect of Varying the Permanganate Number on Yield of Unbleached Pulp from Balsam Fir

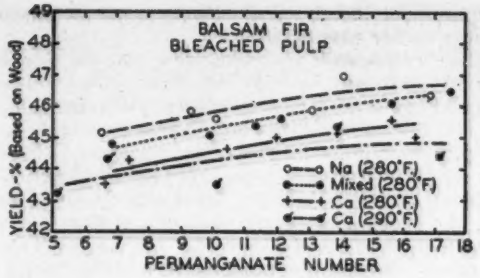

FIG. 6

Effect of Varying the Permanganate Number on Yield of Bleached Pulp from Balsam Fir

of wood. In each series the cooking time was varied to produce five or six pulps with permanganate numbers ranging from 6 to 16. With each wood species the following cooking acids and maximum temperatures were used:

Sodium-base acid; 280 deg. F. maximum temperature.
Mixed-base (50/50 = Ca/Na as SO_2) acid; 280 deg. F. maximum temperature.
Calcium-base acid; 280 deg. F. maximum temperature.
Calcium-base acid; 290 deg. F. maximum temperature.
1.0% combined SO_2 and 5.0% free SO_2, unless otherwise stated.

The series using calcium-base acid at a maximum temperature of 290 deg. F. was made because it had been found that with this temperature as the maximum approximately the same degree of cooking as measured by permanganate number could be attained in a given time as with a sodium-base acid with 280 deg. F. as the maximum temperature. Thus, it was possible to compare the two acids when conditions were such as to result in pulps of the same bleach

TABLE III.—CHIP SIZE FRACTIONATION

Retained on	Spruce Grams	Spruce Weight, %	Balsam Fir Grams	Balsam Fir Weight, %
1 inch	973	25.5	476	21.1
¾ inch	1243	32.5	733	32.4
½ inch	1095	28.6	659	29.2
¼ inch	449	11.8	343	15.2
Fines	60	1.6	47	2.1
Thickness, inches	Thickness (1-inch Fraction)			
0-¼	61	6.3	20	4.2
¼-¾	523	54.1	219	46.3
¾-1	383	39.6	234	49.5
	Thickness (¾-inch Fraction)			
0-¼	331	26.7	156	21.3
¼-¾	704	56.6	455	62.3
¾-1	208	16.7	120	16.4

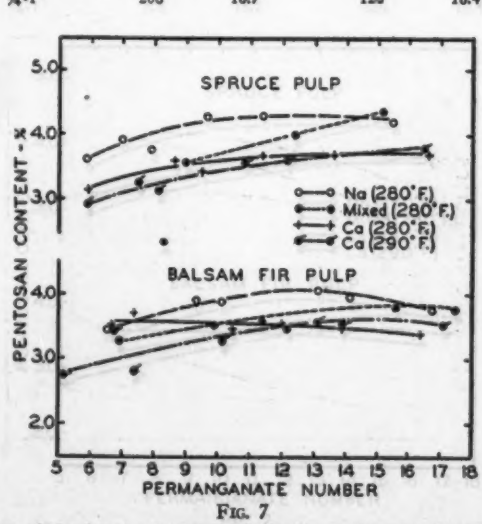

FIG. 7

Effect of Varying the Permanganate Number on Pentosan Content of Unbleached Pulp

requirement in the same cooking time, as was done in the earlier investigation.

The temperature-rise schedule employed was similar to that used in the first investigation. Typical schedules for 10.5 hour cooks are given in Table II.

The digester pressure was allowed to build up to 85 p.s.i. maximum, and this maximum was maintained by relieving from the top of the digester. When the cooking time was changed from that given in Table II, the same temperature-rise curve and the same blowdown period of 1.5 hours for 85 p.s.i. to the blowing pressure given above were used. With the exception of the omission of the water and nitrogen additions to the digester during the temperature and pressure rise, and the use of different digesters, the cooking procedures were the same as described in the previous paper *(1)*.

Of each species, about 30 four-foot sticks of about eight inches average diameter were chipped in a commercial chipper. The spruce chips contained about 43% moisture and the balsam fir about 52%. The results of chip size fractionation tests on moisture-free chips are given in Tabie III. Beating characteristics, permanganate numbers, and ether-soluble contents of the pulps were determined in the same manner as described previously. Pentosans were determined by the standard method of the American Chemical Society. A.C.S. viscosity tests were made by the standard A.C.S. method.

All pulps were screened through an 8-cut plate before being bleached. The bleachings were made under the supervision of T. M. Brown by the procedure described in the earlier paper. The brightness aim in every case was 87.5 to 88.5% reflectance as determined with the G. E. reflection meter.

Degree of Cooking

The effect of variations in cooking time on permanganate number for each acid and for both spruce and fir is shown in Fig. 2. With the same temperature schedule for each acid, and for a pulp with a low permanganate number, approximately one hour shorter cooking time was required for the sodium-base acid than for the calcium-base acid, while at the higher permanganate numbers this difference in time was only about one-half hour. With the mixed-base acid the pulping rate, as measured by the permanganate number-cooking time relationship, was intermediate between that obtained with calcium base and that with sodium-base acid. By the use of a 290 deg. F. maximum temperature approximately the same degree of cooking as measured by permanganate number was obtained in a given time with a calcium-base acid as with a sodium-base acid at 280 deg. F. maximum temperature, other conditions being the same. These relationships were true for both spruce

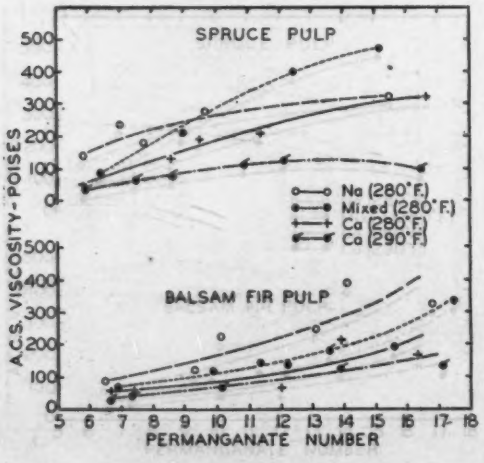

FIG. 8
Effect of Varying the Permanganate Number on A.C.S. Viscosity of Unbleached Pulp

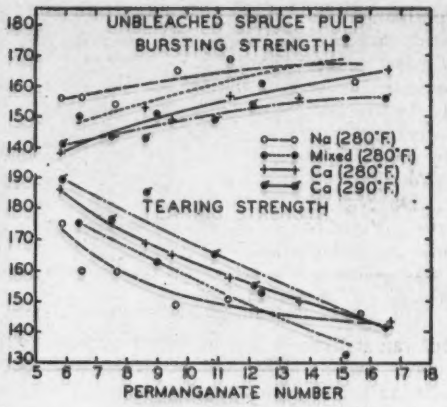

FIG. 9
Effect of Varying the Permanganate Number on Strength Properties of Unbleached Spruce Pulp

Pulp Yields

As shown in Fig. 3, with sprucewood the differences in yield of screened, unbleached pulp with the different cooking acids depended upon the degree of cooking. With a sodium-base acid the yield increased with an increase in the permanganate number throughout the range studied, while with the calcium-base acid a maximum was reached at a permanganate number of about 12. Although the yield of unscreened pulp increased with an increase in the permanganate number above this value, the screenings increased by an amount such that there was little change in the screened pulp yield. For pulps with a permanganate number below about 12, the yield with the mixed-base acid was intermediate between that realized with sodium base and that with calcium-base acid, but in

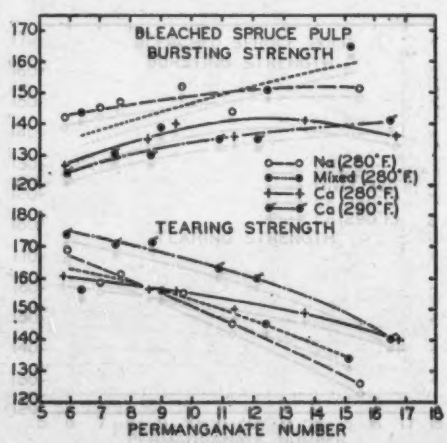

FIG. 10
Effect of Varying the Permanganate Number on Strength Properties of Bleached Spruce Pulp

the permanganate number range above 12, the screened, unbleached pulp yield obtained with the mixed-base acid approached more closely that obtained with the sodium-base acid. This was caused mostly by the fact that with the mixed-base acids the screenings, especially for pulps in this permanganate number range, was relatively low and more nearly like the value obtained with sodium-base acids. When 290 deg. F. maximum temperature was used with the calcium-base acid, so that with a given cooking time the permanganate number of the unbleached pulp was about the same as for a sodium-base acid at 280 deg. F. maximum temperature, the screened pulp yield was lower throughout the permanganate number range studied than in the case of the calcium-base cooks made at 280 deg. F. maximum temperature, owing partly to a higher percentage of screenings and partly to a lower unscreened pulp yield.

The loss in bleaching increased fairly uniformly with an increase in the permanganate number. Accordingly, for the sodium-base acid, the increase in pulp yield with an increase in the permanganate number was less for the bleached pulp than for the unbleached pulp.

The bleached pulp yields obtained with the calcium-base acids at either 280 or 290 deg. F. maximum temperature were at a maximum when the raw stock had a permanganate number of 10 to 11, although about 0.5 to 0.8% lower bleached pulp yields (based on wood by weight) were obtained at the higher maximum temperature, as shown in Fig. 4. The decrease in bleached pulp yields with an increase in the permanganate number above about 11 was due to the increased loss in weight on bleaching and to the constant, or very nearly constant yield of screened, unbleached pulp obtained with the calcium-base acids when the permanganate number was above this value.

In the permanganate number range of 9 to 12 there were only slight differences in bleached pulp yield with the sodium-, mixed-, or calcium-base acids when the same maximum temperature was used; however, as stated previously, when 290 deg. F. maximum temperature was used for the calcium-base acid, the bleached pulp yield, based on wood, was about 0.8% lower. The difference in bleached pulp yields obtained with calcium-base and sodium-base acids, respectively, increased, however, as the permangante number was raised or lowered outside this range. The bleached pulp yields obtained with the mixed-base acid were somewhat intermediate between those obtained with the calcium-base and with the sodium-base acids for the pulps of low bleach requirements, although, at the higher permanganate numbers the yield obtained approached more closely that obtained with the sodium-base acid.

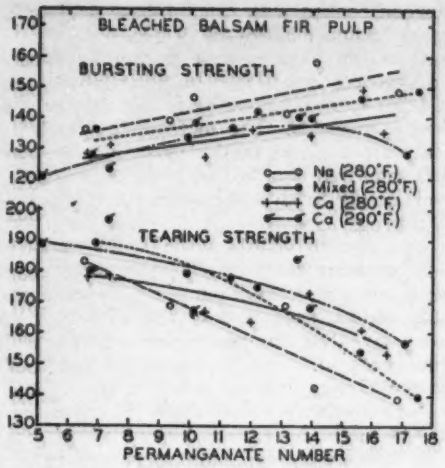

FIG. 12

Effect of Varying the Permanganate Number on Strength Properties of Bleached Balsam Fir Pulp

As shown in Fig. 5, with balsam fir and a 280 deg. F. maximum temperature, about 1% higher yield of screened, unbleached pulp, based on wood, was obtained with the sodium-base acid than with the calcium-base acid, and this difference was fairly constant throughout the permanganate number range studied. The yields obtained with the mixed-base acid were intermediate in value. With the calcium-base acid at a maximum temperature of 290 deg. F., the yield of screened pulp was about 1.0% lower than with the same acid at 280 deg. F. maximum temperature.

With the balsam fir chips, the screenings produced with a given acid changed very little with changes in the permanganate number. This is in contrast to the rapid increase in the screenings obtained with the

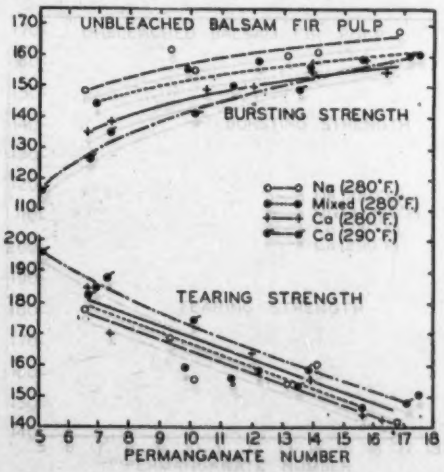

FIG. 11

Effect of Varying the Permanganate Number on Strength Properties of Unbleached Balsam Fir Pulp

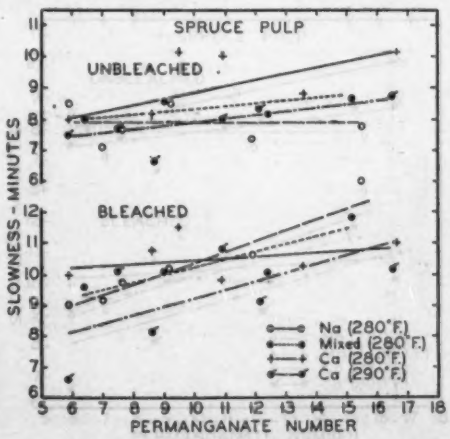

FIG. 13

Effect of Varying the Permanganate Number on the Slowness of Spruce Pulp after 50-Minute Beating

sprucewood cooked with calcium-base acid to a permanganate number above 10 or 12.

As shown in Fig. 6, with balsam fir almost the same differences in bleached pulp yields with the different acids were obtained as in the case of the unbleached pulp yields. The increase in bleached pulp yield for an increase in the permanganate number was less than that obtained with the unbleached pulp, however, owing to an increase in the bleaching loss.

Pentosan Content

Milder cooking conditions, either a shorter cooking time or a lower maximum temperature, were possible with the sodium-base acid in the preparation of a pulp of a given permanganate number than with the calcium-base acid. This circumstance was probably one of the factors causing a higher pulp yield with the sodium-base acid. That the milder cooking conditions, as might be expected, resulted in a higher pentosan content in the pulp is shown in Fig. 7. Although the results obtained were somewhat erratic, the pentosan content, in general, increased with an increase in the permanganate number, and was higher for the pulps cooked with a sodium-base acid than with a calcium-base acid. Also, when the higher maximum temperature was used with the calcium-base acid the pentosan content was lower.

Viscosity

A further indication of the lesser degrading action on the pulp during the sodium-base acid cooks as compared with the calcium-base acid cooks is given by viscosity tests made on the unbleached pulps. These results, which are shown in Fig. 8, indicated that, at a given permanganate number, pulps of higher viscosity were obtained with the sodium-base acids than with calcium-base acids. In general, the values obtained with a mixed-base acid were intermediate. For a given permanganate number, the viscosity obtained with a calcium-base acid at 290 deg. F. maximum temperature was lower than for the same acid at 280 deg. F. maximum temperature.

Pulp Strength Properties

As shown in Figs. 9 and 10, with the sprucewood there was, in general, a tendency for the sodium-base acids to give pulps of higher bursting strength and lower tearing resistance in the standard beating test than did the calcium-base acids. When 290 deg. F. maximum temperature was used with the calcium-base acid, the bursting strength was lower and the tearing resistance higher than was obtained at 280 deg. F. maximum temperature with this acid. These same trends were obtained with both the unbleached and bleached pulps and probably were associated with the higher pentosan content of the pulps cooked under the milder conditions.

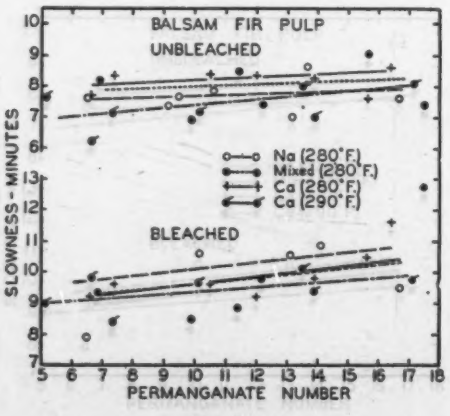

Fig. 14
Effect of Varying the Permanganate Number on the Slowness of Balsam Fir Pulp after 50-Minute Beating

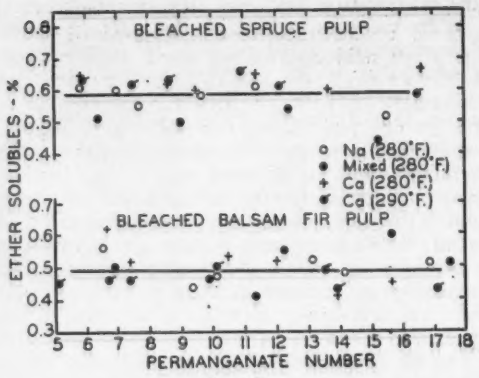

Fig. 15
Effect of Varying the Permanganate Number on the Ether-Soluble Content of Bleached Pulp

With the balsam fir wood, as shown in Figs. 11 and 12, the same differences in bursting strength were obtained as with the sprucewood—i.e., a higher bursting strength after 50 minutes' beating was obtained with the sodium-base acid pulps than with the calcium-base acid pulps cooked to the same permanganate number. However, with the balsam fir, the tearing resistance of the unbleached pulps was about the same for the different acids, although there seemed to be a tendency for the tearing resistance of the bleached pulps to be higher when calcium-base acid was used.

In general, an increase in bursting strength and a decrease in tearing resistance were noted as the permanganate number increased.

As shown in Figs. 13 and 14, when the same maximum temperature was used during the cooks the slowness developed after 50 minutes' beating of the unbleached pulp of either species was slightly higher

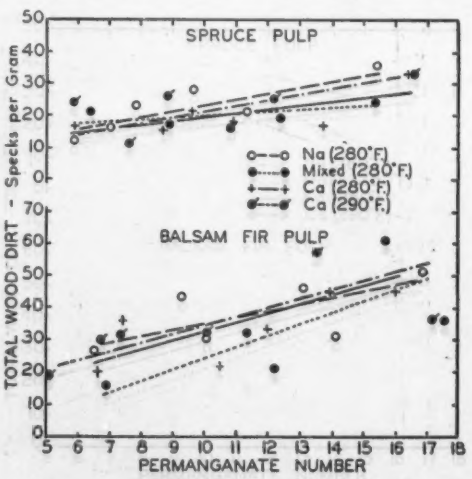

Fig. 16
Effect of Varying the Permanganate Number on Wood Dirt Content of Bleached Pulp

with the calcium-base acid than with the sodium-base acid. With the bleached pulps the differences obtained were erratic, although, with the exception of the spruce pulps of low permanganate number, the slowness obtained with the sodium-base acid pulps was higher than for the calcium-base acid pulps.

In general, the slowness developed by the pulps prepared with the calcium-base acid at 290 deg. F. maximum temperature was lower than for those prepared with either calcium- or sodium-base acid at 280 deg. F. maximum temperature. The unbleached pulps showed a slight tendency or none at all to increase in slowness with an increase in permanganate number; the bleached pulps, on the other hand, tended to increase in slowness slightly with an increase in the permanganate number of the corresponding raw stock. This more pronounced tendency of the bleached pulps to increase in slowness was probably due to the fact that as the permanganate number rose more bleach naturally had to be used to bring the pulp to a brightness of 87.5 to 88.5%, the range adopted as standard in this study.

Ether-Soluble Content

The bleached pulp ether-soluble content values are shown in Fig. 15. With the apparent exception of the mixed-base acid cooks made with the sprucewood, there did not appear to be any significant differences in the ether-soluble content of the pulps for these different acids. The cooks with the mixed-base acid and the sprucewood were, however, not made until

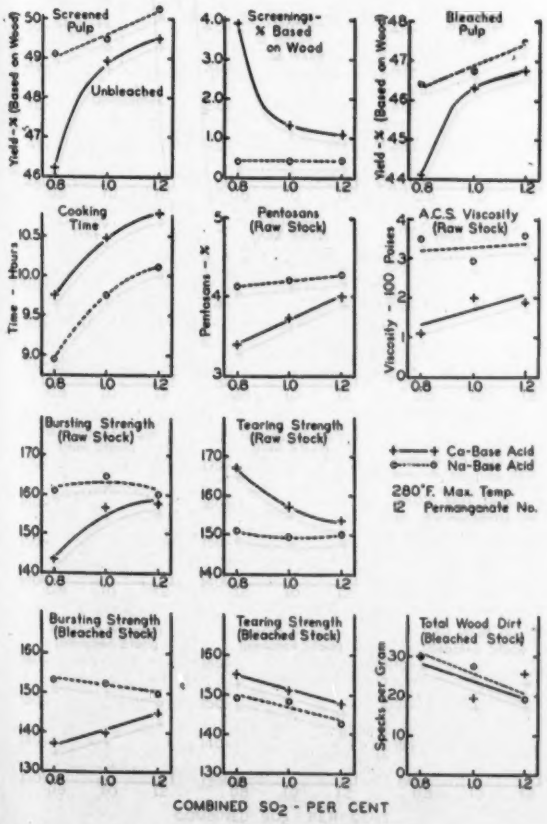

FIG. 17
Effect of Varying the Combined SO_2 on Yield and Properties of Pulp from Spruce

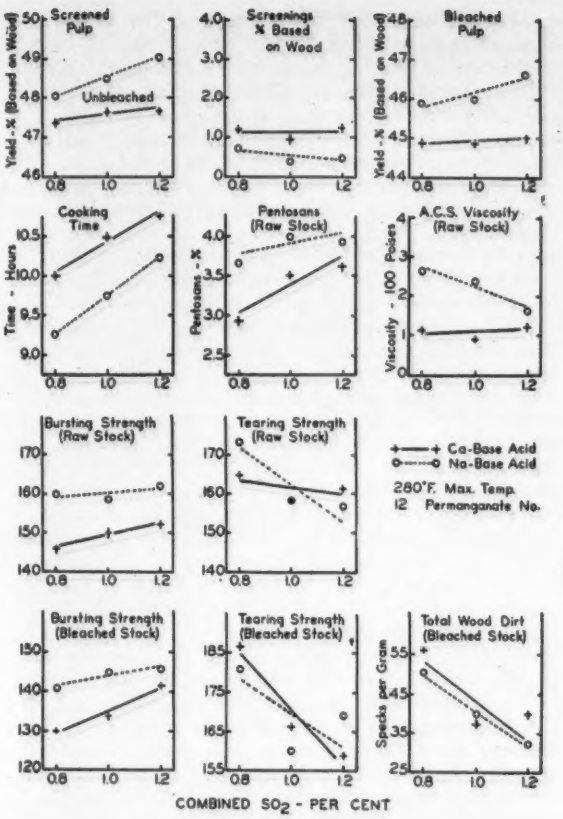

FIG. 18
Effect of Varying the Combined SO_2 on Yield and Properties of Pulp from Fir

almost one month later than the other cooks with the spruce; hence, the lower ether-soluble contents for these pulps are probably due to a longer aging of the chips rather than to any inherent property of the acid.

Wood Dirt Content

In laboratory pulping studies it is difficult to obtain precise data on the dirt content of pulps, owing to the ease of contamination of the pulp during handling. Accidental departures from a standard procedure of screening and relatively slight differences in final brightness of the bleached stocks also may cause relatively large variations in speck count. In an attempt, despite these difficulties, to determine the effect of the nature of the base of the cooking acid, the wood, and the degree of cooking on the count of specks in the bleached pulps, a microscopic analysis of all specks in a known weight of pulp was made, and the total wood dirt, either resin, shive, or bark, was evaluated in terms of the area of the specks per gram of pulp. As shown in Fig. 16, a tendency was evident for the wood dirt content of the bleached pulps to increase with an increase in the permanganate number of the unbleached pulp within the range studied. Also, the specks were more common in the balsam fir pulps than in the spruce pulps. However, for any given permanganate number of the corresponding raw stocks there were no marked significant or consistent differences in the speck counts of the bleached pulps dependent upon the type of base used in making up the cooking acids.

Effect of Combined SO_2 on Pulp Yield and Properties

In investigations of pulping, laboratory results obtained under ideal conditions of liquor circulation and attendant uniformity of temperature and chemical composition of the cooking liquor throughout the digester may be applied only with the greatest caution to the prediction of results in commercial operation, especially where relatively nonuniform conditions are known to exist within the mill digesters. Thus, in a direct-steamed digester unequipped with external circulating means zones are usually present in which the concentration of chemicals, the temperature, etc., differ widely from the average for the contents of the digester as a whole. To determine the possible effect of such nonuniformity—e.g., with regard to the combined SO_2 content of the cooking acid—a series of laboratory experiments was made in which the combined SO_2 content of both calcium- and sodium-base acids was varied from 0.80 up to 1.2% with the free SO_2 content maintained at 5.0%. In each series the standard cooking procedure as given in Table II and a 280 deg. F. maximum temperature were used, and the degree of cooking as measured by permanganate number was varied by changing the cooking time. Based on the data thus obtained, curves were drawn, from which pulp yields and pulp characteristics were read off at a permanganate number of 12 for each concentration of combined SO_2 and for both calcium- and sodium-base acids. These results are shown in Figs. 17 and 18, the first relating to spruce and the second to fir. As shown in Fig. 17, in the case of the spruce chips, the differences in pulp yields and pulp properties for calcium-base acid as compared with sodium-base acid increased as the combined SO_2 concentration was lowered. With the calcium-base acid, the screened unbleached and bleached pulp yield decreased greatly as the combined SO_2 concentration was changed from 1.0 to 0.8%, owing mostly to a high percentage of screenings with the 0.8% combined SO_2. As shown in Fig. 18, the results with the fir chips were similar except that the differences in pulp yields decreased with decreasing content of combined SO_2. Accordingly, it may be inferred that if in a commercial operation there is a tendency for the combined SO_2 to decrease appreciably in certain zones within the digester owing to dilution by steam and poor circulation, the effect of the decrease may, in some instances, be more serious with the calcium-base than with the sodium-base cooking-acid.

It is significant that in the laboratory experiments involving spruce, with an 0.80% combined SO_2 sodium-base acid, the pulp yields were the same as obtained with a 1.0% combined SO_2 calcium-base acid, and the pulp properties were equally as good, yet the cooking time was 1.5 hours shorter with the 0.8% combined SO_2 sodium-base acid. With fir, the conclusion was somewhat similar, except that the pulp yields were higher with 0.80% combined SO_2 sodium-base cooking acid than with either 1.0 or 1.2% combined SO_2 calcium-base cooking acid.

Conclusions

With either red spruce or balsam fir a given degree of cooking as measured by permanganate number was obtained in a shorter cooking time with sodium base acid than with calcium-base acid when a given, normal maximum temperature and temperature-rise schedule were used.

Differences in pulp yield were obtained with these different acids, and these differences were found to depend upon species of wood and the degree of cooking. A slight increase in yield was obtained in the laboratory by the substitution of sodium-base acid for calcium-base acid, but it was not large enough ordinarily to justify the use of the more expensive sodium-base acid, although other factors, such as the faster rate of cooking noted with the sodium-base acid or the possibility of using a lower combined SO_2 concentration with the sodium-base acid than with calcium-base acid might, under certain conditions, make the use of sodium-base or mixed-base acid more interesting from the practical point of view.

At the same permanganate number pulp cooked with the sodium-base acid had a higher pentosan content and viscosity than the pulp cooked with the calcium-base acid.

With sprucewood, pulps prepared with sodium-base cooking acid developed a higher bursting strength and lower tearing resistance in a normal milling time than did those prepared with calcium-base liquor. The same differences in bursting strength were obtained with balsam fir, but there seemed to be little differences in tearing resistance.

No significant differences in ether-soluble contents were obtained for any of these acids with either species of wood.

Care must be exercised in the application of laboratory data obtained under idealized conditions to the operation of mill digesters in which nonuniform conditions of temperature or concentration exist.

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2. Koon, C. M., and Keepers, C. H. *Paper Trade J.* 112, no. 1:34-5 (Jan. 2, 1941).

H. R. Alley To Be Technical Director

Harold R. Alley has recently become associated with Tested Papers of America, Inc., to act as technical director of their modern paper testing laboratory at 230 North Michigan avenue, Chicago, Ill. Mr. Alley is a graduate chemical engineer with 14 years of varied experience in the field of materials testing. For the past 11 years he has been associated with the Commonwealth Edison Company of Chicago, in the Chemical Division of their testing department.

During his connection with the Commonwealth Edison Company, Mr. Alley has assisted in the preparation of numerous specifications for a wide variety of products used by the firm, developed many new test procedures, as well as new pieces of testing equipment. His experience in his association with a group of over 150 testing engineers in the field of physical, chemical and electrical testing helps to fit him especially for his new work with Tested Papers of America, Inc.

Mr. Alley is a member of the American Chemical Society and was instrumental in the formation of a commercial chemistry group in the Chicago section. He is also secretary of the Chicago Section of the Electrochemical Society, and is a member of Alpha Chi Sigma, the country's largest chemical fraternity.

Since coming to Chicago, Mr. Alley has attended the University of Chicago, specializing in chemical microscopy and has taken special courses in the Northwestern School of Commerce.

Laminated Plastic—One Answer to Shortage of Critical Metals*

By F. P. Hunsicker[1]

Abstract

Severe shortages of critical materials such as bronze, Monel metal, stainless steel, copper and rubber are interfering with plant maintenance. Micarta —a laminated plastic of high strength and durability has proved itself in many applications in pulp, paper, and paperboard mills and can do many other jobs not heretofore considered. Of particular importance is its resistance to corrosion from water and chemicals abounding in pulp and paper mill processes and it may do the work of the now hard-to-get metals and rubber.

The shortage of critical metals and rubber is seriously interfering with maintenance of plant equipment. Particularly is this true in pulp, paper and paperboard mills where metals least affected by chemicals and corrosion are used in large quantities. Engineers are now more than ever on the alert for substitute materials which may or may not be as well suited for the job but which are available. They have turned to plastics for substitutes and in many cases have found that they have been overlooking a material which will perform better than those they were accustomed to using.

Laminated Phenolic Plastics

In the wide field of plastics one of the oldest and best known types is the laminated phenolic group characterized by their high strength and toughness. The chief characteristics are as follows:

1. Tensile strength—9000 p.s.i.
2. Compressive strength—36000 p.s.i.
3. Flexural strength—14000 p.s.i.
4. Low moisture absorption—less than 1%
5. Resistance to acids and alkalies
6. Noncorrosive
7. Permanently hard—110 Rockwell M
8. Will not crack or split
9. Lighter than aluminum—specific gravity 1.35
10. Low coefficient of friction with water lubrication

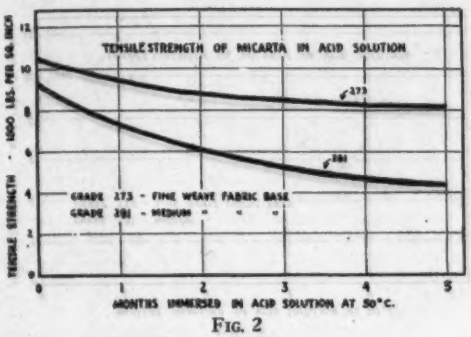

TENSILE STRENGTH OF MICARTA IN ACID SOLUTION
TENSILE STRENGTH - 1000 LBS. PER SQ. INCH
GRADE 273 - FINE WEAVE FABRIC BASE
GRADE 281 - MEDIUM " " "
MONTHS IMMERSED IN ACID SOLUTION AT 50°C.

FIG. 2

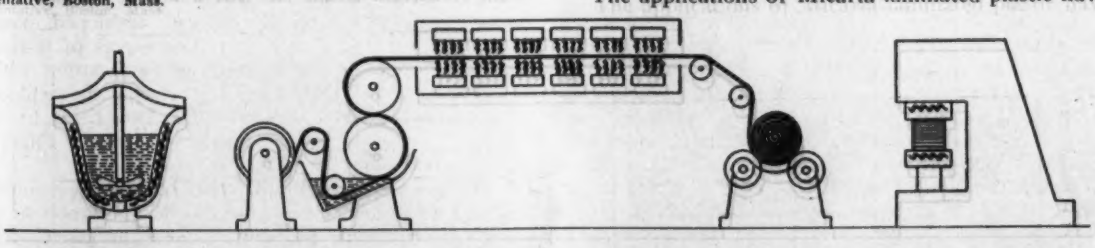
11. Resistant to abrasion and wear
12. Remarkable endurance
13. Available from raw materials manufactured in U. S.

The above are the chief characteristics of a material which has become familiar to many mill operators in the past decade—Micarta, a laminated plastic that has proved to be the answer to many operating problems in the pulp, paper, and paperboard mills. Micarta is a heavy duty, thermosetting plastic made from paper or cloth impregnated with synthetic resins and compressed under heat into a permanently solid substance with high structural and dielectric properties. Figure 1, a simplified chart, shows the 3 major steps in manufacture.

The synthetic phenol-formaldehyde resin is made in the autoclave. A vehicle of volatile solvent is used to keep the resin in liquid form which is used to impregnate rolls of cloth or paper by passing them through a dip tank filled with the liquid resin. The solvent is then driven off by passing the dipped material through ovens. The final stage of manufacture is baking the impregnated material in hydraulic presses producing the hard, dense product described above. The chemical changes taking place in the final stage are irreversible, and the product resulting is known as a thermosetting plastic.

Applications

The applications of Micarta laminated plastic have



AUTOCLAVE
Phenol + formaldehyde + catalyst + heat = A-stage resin, liquid

TREATING MACHINE
Impregnation of cloth or paper + drying = material with B-stage resin, solid but fusible (later cut into sheets)

HYDRAULIC PRESS
Stack of sheets + pressure + heat = Micarta (C-stage resin, solid, insoluble and infusible)

FIG. 1

* To be presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Statler, Boston, Mass., Sept. 29-Oct. 1, 1942.

[1] Westinghouse Electric & Mfg. Co., Micarta Headquarters Representative, Boston, Mass.

been many and varied. Some of the proven applications in pulp, paper and paperboard mills are given below and should serve as a guide to new applications:

1. SUCTION BOX COVERS—Wire and cover life have been increased.
2. DOCTOR BLADES—Added life to rolls and improved doctoring.
3. TOE BLOCKS—Last longer.
4. BEARINGS—Saver power, frequent replacement, and expense.

(a) Breast rolls
(b) Press rolls
(c) Table rolls
(d) Dandy rolls
(e) Calender rolls
(f) Beaters
(g) Felt rolls
(h) Whippers

5. SHAKE SPRINGS—Eliminated frequent replacements.
6. TABLE ROLLS—Increased life, lowered weight, reduced water spray and "worms" because Micarta covered table rolls do not throw water as does metal and rubber.
7. SEAL STRIPS—Improved the operation of suction rolls because the seal strips last longer and wear evenly.
8. FORMING BOARDS—Wears evenly and saves wires.
9. Made wire saving DEFLECTOR STRIPS between table rolls.
10. Made better FELT CONDITIONERS because of

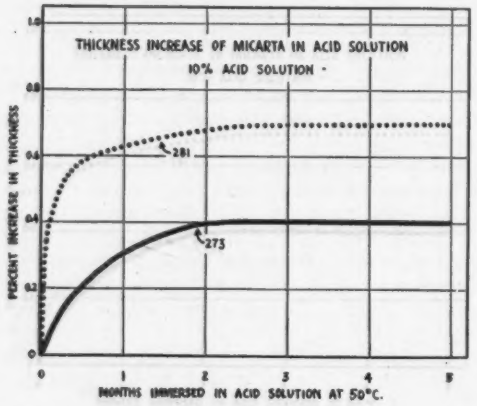


FIG. 3

high strength, resistance to wear and low coefficient of friction.

11. Improved operation and eliminated frequent replacements as PUMP VALVES and PISTON RINGS in stock and water pumps.
12. GEARS—Quieted machinery and increased life.

About 150 pieces of plastic can be used on a 160-inch fourdrinier machine in applications with which we are now familiar and on which it has proved

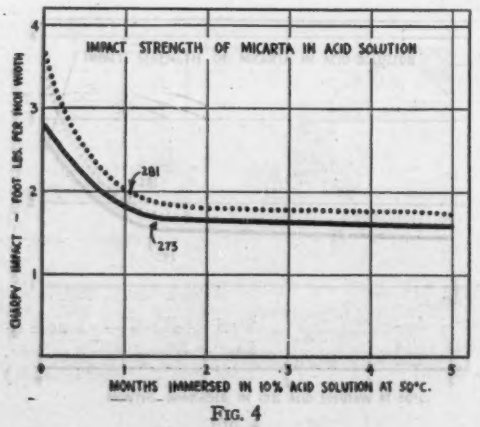

IMPACT STRENGTH OF MICARTA IN ACID SOLUTION
CHARPY IMPACT - FOOT LBS. PER INCH WIDTH
281
273
MONTHS IMMERSED IN 10% ACID SOLUTION AT 50°C.

FIG. 4

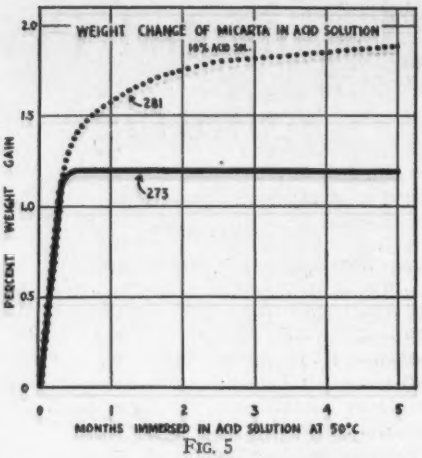


FIG. 5

satisfactory. Since these uses for this material are familiar to most engineers and operating men they will not be discussed in more detail here.

Replaces Critical Materials

Every mill is confronted today with the problem of maintenance of equipment in the face of acute shortages of certain materials. Particularly critical are bronze, Monel metal, stainless steel and rubber.

The unusual properties of a laminated plastic make it a likely substitute and in many cases it will be found to be more than a substitute and the best material for the job. It is by no means meant that the laminated plastic is a cure-all for these shortages. In some applications it will work out immediately while others may not work at all. Experimenting to adapt the proper grade will have to be done and complete cooperation between mill and the manufacturer will be necessary to avoid wrong moves. Because there are about 40 grades of Micarta with varying characteristics, application without consulting qualified engineers may result in condemnation without a fair trial.

In the manufacture of laminated plastics various fillers of paper and cloth with varying resins and resin content produce a wide range of properties. For example, to produce a material with high impact strength a heavy weave fabric with low resin content will produce the best result. However, the moisture absorption of this material will necessarily be higher than that of a finer weave fabric-high resin content grade. Thus if one characteristic is to be emphasized

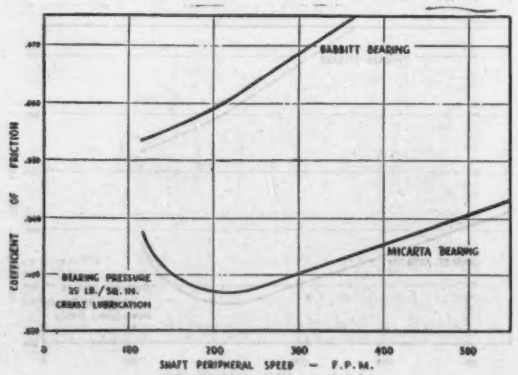


FIG. 6

it will likely be at the sacrifice of other properties. It is therefore highly desirable to consult with the manufacturer for a recommendation of the proper grade for any particular application.

Standard Forms

Micarta is available in standard forms such as plate, tubes, rods, angles and channels. It is also molded to shape from treated cloth or paper that has been chopped into small pieces. The latter is generally known as mascerated. Simple shapes may be machined from the standard forms or blocks of mascerated material. This is nearly always done when quantities involved are low and insufficient to justify mold costs.

Molds are made from special steels and high priorities are required to obtain them. For this reason more fabrication will be necessary in these times than in normal times.

The plastic machines easily and cleanly, using metal-working tools. In general, it works similarly to soft brass. Complete recommendations are available from the manufacturer on how to most successfully perform machining operations. The manufacturer will also supply fabricated materials al-

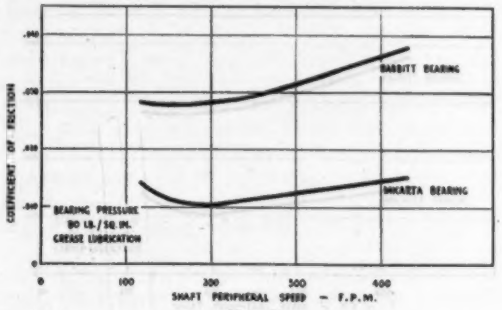


FIG. 7

though most mills will probably elect to use their own facilities.

Resistance to Chemicals

Acid resistance is the prime requisite of most metals which mills now find hard to obtain. Laminated plastic has good acid-resisting qualities for an organic material and because of its strength may well do some of the jobs that bronze and stainless steel are now doing. A study of acid resistance of the two

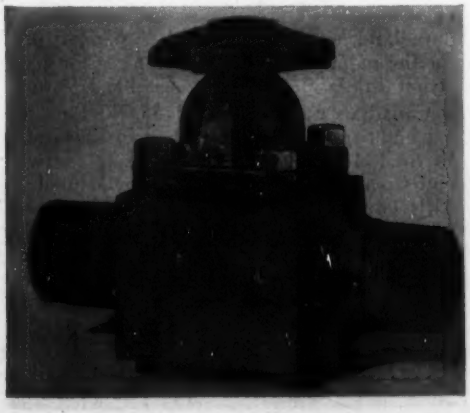


FIG. 9
Micarta Valve for Chlorine Gas Piping

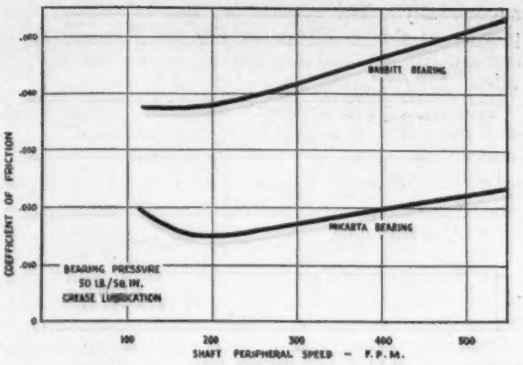


FIG. 8

grades of Micarta best suited for work with acids brought out that gradual decrease in strength is to be expected with continuous exposure to acid. Specimens were immersed in 10% sulphuric acid solution at 50°C. and tensile strength, impact strength, weight change and thickness increase periodically checked the results of which are plotted in Figs. 2, 3, 4, and 5. It is to be noted that changes are gradual and the materials are dependable over long periods making them applicable for use in connection with this acid. Other acid and caustic solutions have similar effects.

Experience with strong chemicals has been gained largely in the plating industry where plating barrels and racks are made of laminated plastic because of the superior resistance to corrosion over metals. In general, pulp, paper and paperboard mill applications will not be as severe from this standpoint as plating solutions.

Piping

Micarta has been applied successfully in the form of tubing for piping chemical solutions. It is made in standard iron pipe sizes in 36 and 48-inch lengths. Couplings are made of larger tubing threaded on the inside and ells, tees, and valves are machined from mascerated-molded blocks or in some sizes molded to shape.

For piping of 5% acid solutions up to 70 p.s.i. pressure this plastic has lasted longer than silica bronze pipe formerly considered best. In some cases Micarta showed three times the life of bronze.

Wet chlorine gas is extremely corrosive to even bronze pipe, and Micarta pipe, fittings and valves are handling this at 70 p.s.i. pressure in one mill very

FIG. 10
Micarta Pipe and Fittings

successfully. The valve is of special interest and a picture of this is shown in Fig. 9. The valve is so constructed that no gas comes in contact with the few metal parts used.

Micarta pipe is lasting longer in handling kaolin clay solutions on a clay filter press. Metal pipe has always been a problem here because of acid solutions of pH value 4 to 5 deteriorating the pipe rapidly. The plastic pipe lasts 2 to 3 times longer.

Grease-Lubricated Bearings

At the beginning of this paper proven bearing applications for laminated plastic were listed. There are many other bearings and bushings usually made of bronze or babbitt where it might work out. In general, this plastic is considered applicable where water is available for lubrication. Grease lubrication can also be used with Micarta and typical curves are presented here showing coefficient of friction with various loads and comparing it with babbitt, in this respect. See Figs. 6, 7, and 8. It is notable that the friction is considerably less with Micarta and therefore well worthy of consideration from power saving standpoint as well as replacement of critical metals.

Suggested Applications

Recently many applications for laminated plastic have been suggested. Some of these will be tried and a few are listed here with the hope that they will suggest others.

1. Sand Filter Heads (Various Types).
2. Valve Seats and Balls for Triplex Pumps.
3. Slide Valve Seats and Piston Rings for Sulphurous Acid Pumps.
4. Bushings for Chip Cutter on Hammer Mill.
5. Screen Plates (for both flat and cylindrical screens).
6. Water Seal (Top Hat).
7. Rods on cylinder mold.
8. Diaphragm replacing rubber on flat screens.

Any favorable results of trials in these suggested applications will be made known to the pulp, paper, and paperboard industry. These applications may bring to light many others where laminated plastics may "fit." Plastics engineers are eager to work with other industries in applying their products. War shortages are bringing this about, and plastics engineers are confident that with the cooperation of the pulp, paper and paperboard industry many irritating problems will be solved.

Gurley Wins Army-Navy "E"

W. & L. E. Gurley, manufacturers of engineering instruments, Troy, N. Y., have been awarded the Army and Navy "E" pennant for high production in war equipment. The honor was conferred on the Gurley firm September 2, in Music Hall, with distinguished representatives of the Army, Navy, Marine Corps, and Coast Guard present.

The award was made by Brig. General Raymond F. Fowler, Chief of the Supply Division, Office of Chief Engineers, U. S. Army. Mayor Frank J. Hogan delivered the address of welcome for the city.

Edgar H. Betts, vice-president of W. & L. E. Gurley, officiated as master of ceremonies.

The principal address was delivered by General Fowler, after which the "E" pennant was presented to Charles I. Day, president of W. & L. E. Gurley, who accepted the award for the firm. The employees were represented by Arnold E. Staude, with a record of 62 years of service with the firm.

TAPPI Notes

A large attendance is expected at the fall meeting of the Technical Association of the Pulp and Paper Industry to be held at the Hotel Statler, Boston, Mass. Room reservations should be made as soon as possible. Mention the TAPPI Convention to get the reduced rate. A feature of the meeting will be an extremely interesting exhibit of paper and the part it is taking in the war effort.

The TAPPI Pacific Section will meet at Everett, Wash. on October 6, 1942.

The TAPPI Year Book, now in preparation, will list, insofar as possible the names of all members now in the armed services. Members are requested to notify R. C. Macdonald, 122 East 42nd Street, New York, N. Y. of any members that are known to be in these services.

Willard F. Schroeder formerly of the Kimberly Clark Corp. is now control chemist for Rayonier, Inc., Fernandina, Fla.

Lewis K. Burnett, formerly of Gair Containers, Inc. is now paper technologist for the Curtis Publishing Company, Philadelphia, Pa.

John Campbell, formerly of Reynolds Metals Company is now research director for the Union Bag & Paper Company, Hudson Falls, N. Y.

Change in TAPPI Standards. The TAPPI Standard Committee has approved the advancement of two TAPPI Suggested Methods to Tentative Standards, namely 450 sm-40, Pentosans in Paper, and T 446 sm-40, Creasing Quality of Paper.

C. Delderfield of the John Dickinson Company in England will attend the TAPPI fall meeting in Boston and report on the status of the paper industry in Great Britain.

David P. Winton and members of his Paper Branch of the War Production Board will discuss the latest developments relative to the paper industry at the Boston Meeting.

Newsprint Production Lower

Production of newsprint in Canada during August, 1942, amounted to 253,239 tons and shipments to 255,563 tons, according to the News Print Service Bureau. Production in the United States was 79,885 tons and shipments 79,556 tons, making a total United States and Canadian newsprint production of 333,124 tons and shipments of 335,119 tons. During August, 16,995 tons of newsprint were made in Newfoundland, so that the North American production for the month amounted to 350,119 tons. Total production in August, 1941, was 405,329 tons.

The Canadian mills produced 55,080 tons less in the first eight months of 1942 than in the first eight months of 1941, which was a decrease of two and five-tenths percent. The output in the United States was 44,169 tons or six and four-tenths percent less than in the first eight months of 1941, in Newfoundland production was 41,314 tons or seventeen and seven-tenths percent less, making a total decrease of 140,563 tons, or four and five-tenths percent less than in the first eight months of 1941.

Stocks of newsprint paper at the end of August were 154,122 tons at Canadian mills and 18,149 tons at United States mills, making a combined total of 172,271 tons compared with 174,266 tons on July 31, 1942, and 168,673 tons at the end of August, 1941.

IMPORTS OF PAPER

NEW YORK IMPORTS

WEEK ENDING SEPTEMBER 12, 1942

SUMMARY

Newsprint .....1,367 rolls

NEWSPRINT

——, ——, ——, 367 rolls.
——, ——, ——, 342 rolls.
——, ——, ——, 243 rolls.
——, ——, ——, 415 rolls.

PAPER STOCK, ETC.

National City Bank, ——, ——, 233 bags old pickers.

BONES

——, ——, ——, 4918 bags.

WPB Program at TAPPI Meeting

Several hundred new converted paper products will be shown at the exhibit to be held in connection with the fall meeting of the Technical Association of the Pulp and Paper Industry to be held at the Statler Hotel, Boston, Mass., on September 29-October 1, 1942. These exhibits will show the progress being made by the paper and container industries in supplying materials to push the war effort and to conserve critical materials.

The hotels in Boston report an unprecedented room reservation list. It is, therefore, very important to make room reservations at once. An unusually large number of paper converters have indicated their intention of being present at the War Time Packaging Session on Tuesday, September 29, when Captain Robert R. Nelson of the Quartermaster Corps will discuss food packaging.

The immediate problems of the industry in relation to the war program will be discussed on Wednesday, September 30, when members of the staff of the Paper Branch of the War Production Board will participate.

David P. Winton, chief of the Paper Branch of the WPB will discuss "The Future of the Paper Industry as I See It." Arthur G. Wakeman will outline the functions of the personnel and divisions of the Paper Branch.

John Strange of the WPB will conduct a round-table discussion on "New Papers and Paper Products in Relation to the War."

An interesting addition to this program will be a talk by C. Delderfield of England on the paper industry in Great Britain at war.

On Thursday there will be an important discussion on tub sizing problems.

OPA Broadens Kraft Interpretation

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 16, 1942—An alternative method which merchants and distributors of kraft wrapping and bag papers may use in specifying price differentials applicable in their sales of these paper products was announced by the OPA.

The announcement, in effect, broadens the existing interpretation of the requirements for posting applicable differentials as set forth in Maximum Price Regulation No. 182 (Kraft Wrapping Paper and Certain Kraft Bag Papers.)

Under the provisions of the regulation, merchants and distributors are required to set forth specifically in every invoice, or other evidence of sale, the applicable manufacturer's differentials which they have added to their prices. (The regulation provides zone, quantity, basis weight, quality and other differentials which, when paid for by the merchant or distributor, may be passed on to their customers.)

As a result of today's interpretation, merchants and distributors of these kraft papers may substitute a list of differentials which may be attached to the invoice instead of having to insert on each invoice the applicable differential. This list, setting forth all of the nine differentials provided for in the regulation, may be printed, stamped, mimeographed or indicated in some similar manner. When lists such as these are used, the merchants and distributors are required to check or encircle the appropriate applicable differential and must be sure to state the amount of the differential involved in the sale.

Seizes Stock of Voith Co.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 16, 1942—Leo T. Crowley, Alien Property Custodian, announced the seizure by his office of the capital stock of the American Voith Contact Company, Inc., of New York City, New York, and its associated companies J. M. Voith Company, Inc., and Voith-Schneider Propeller Company, Inc.

The principal business of these companies is owning and licensing patents important in the production of pulp and paper machinery.

The vesting calls attention to the frequency with which nationals of enemy countries sought, at a late hour, to shield their American properties from seizure by the United States government in the event of war. The Voith properties were turned over to an old and trusted employee on August 28, 1939, ostensibly as a gift or bonus rewarding long and faithful service. Investigation disclosed that even after this transfer of stock ownership the old relationships continued and beneficial interest in the companies continued in the hands of the German interests.

O. I. C. Awarded "E" Pennant

The Ohio Injector Company was formally presented with the Army-Navy "E" Pennant in the company's new steel valve plant at Wadsworth, Ohio, on August 26. All O. I. C. employees, members of their families and thousands of fellow townsmen witnessed the impressive ceremonies at which Governor John W. Bricker of Ohio, and Captain R. P. Schlabach, USN, were the principal speakers. The program was broadcast over the Mutual Broadcasting System with John B. Kennedy as master of ceremonies.

Presented by Captain Schlabach, the Army-Navy "E" Pennant was received and acknowledged by P. M. Arnall, executive vice-president of The Ohio Injector Company. The Army-Navy "E" pins were presented to employees of the company by Lieutenant A. R. Staudt, USNR, and were acknowledged on behalf of the employees by Charles Taylor.

Following the ceremonies, company officials tendered Governor Bricker, Captain Schlabach and visiting Army and Navy officers and other dignitaries a complimentary luncheon at the Portage Country Club in Akron.

New York Paper and Pulp Market Review

Uptrend In Demand For Major Grades of Paper Is Expected — Easy Bleaching Grades of Chemical Pulp More Active — Demand For Lower Grades of Waste Improved — Papermaking Rags Slow.

Office of the PAPER TRADE JOURNAL.
Wednesday, September 16, 1942.

Expectation of a moderately good demand for major grades of paper this fall are reflected in some of the reports received from many manufacturers' representatives, jobbers, and general paper merchants this week. Opinion in the industry and trade apparently views the immediate and mid-fall trade prospects as good, with a less favorable outlook for most civilian goods late this year.

Among the important factors affecting paper is the downward trend in consumption for many grades. This decline, contributed in large part by the complete conversion of the automobile, refrigerator, radio, electrical appliance and other manufacturing plants to war supplies, is not expected to be regained by the substitution of paper for other more essential war materials, at least for some time. The lower standard of living which must be adopted to put the United States on a more complete war economy, is expected in some quarters to result in a decline in the civilian per capita consumption of paper and paper products. With this country engaged in the greatest war effort in its history, the future is uncertain and all civilian activities must of necessity be subordinated to the big task of winning the war.

The index of general business activity for the week ended September 5, declined to 130.8%, from 132.6% for the preceding week, compared with 128.8% for the corresponding week last year. Paper board production was 2.2% lower.

Paper production for the week ended September 5 was estimated at 83.2%, compared with 84.8% for 1941, with 71.2% for 1940, with 74.0% for 1939, and with 66.0% for the corresponding week for 1938.

Paper board production for the week ended September 5 was 78.0%, compared with 80.0% for 1941, with 60.0% for 1940, with 63.0% for 1939, and with 57.0% for the corresponding week for 1938.

Paper prices are moderately firm, with no irregularities of importance reported, and little price change is expected to occur in the near future.

Domestic newsprint production for August aggregated 79,556 tons; Canadian production, 253,239 tons, with shipments of 255,563 tons; and Newfoundland produced 16,995 tons. Domestic mill stocks on August 31 totaled 18,149 tons, and Canadian Mill stocks aggregated 154,122 tons.

Wood Pulp

Demand for easy bleaching grades of chemical pulp are reported in some quarters as more active this week. Unconfirmed reports indicate a curtailment in the supply of all bleached pulps for civilian uses may occur within a few weeks.

Domestic pulp production, all grades, for July, 1942, totaled 690,380 tons, compared with 707,109 tons for July, 1941. Production of groundwood was 9.2% lower; bleached sulphite, .97% lower; unbleached sulphite, 9.3% lower; bleached sulphate, 8.9% lower; unbleached sulphate, .96% higher, and soda pulp, 8.4% lower for July, 1942, compared with July, 1941.

Rags

Demand for roofing rags continues steady, with ceiling prices generally maintained. Mill buying of new cotton cuttings is reported slow, despite the decline reported in supplies and forecast for even more limited supplies available in the future. Prices are unchanged.

Old Rope and Bagging

Buying of old rope is less active at this date. Prices on old No. 1 Manila are unchanged at $115 per ton. Prices on other grades are unchanged.

Trading in scrap bagging is reported light. Influenced by limited supplies, prices are quite firm and unchanged.

Old Waste Paper

Demand for old waste paper is moderately good at this date in the lower grades. Little mill buying is currently reported in the higher grades of paper stock. Some sales of No. 1 mixed at $.25 cwt. have been reported. Maximum OPA prices are unchanged.

Twine

The WPB order on agave fiber, states that none will be permitted for the production of ordinary wrapping twine after September 30. This amendment (No. 2) to Order M-84, prohibits importers from purchasing agave wrapping twine without authorization of the Director General for Operations, except under "extraordinary circumstances." Twine processed from tow, waste, or fibers under 20-inches in length, may be imported. There are no restrictions on importing the fiber itself. Permitted consumption in September for wrapping twine totals 1,850,000 pounds, with complete curtailment in effect on September 30, 1942.

Water Testing Equipment

A new series of Water Test Sets is announced by W. H. and L. D. Betz, Gillingham and Worth Streets, Frankford, Philadelphia, Pa. These "A" Series Test Sets include the necessary chemicals and apparatus for determining hardness, alkalinities, chlorides, phosphates and sulphites in water, when any two, three or four of these tests are required. A special cabinet designed for use on table or wall is provided. All chemicals and apparatus are contained in the cabinet, held in a secure position and ready for instant use. A portion of the opened cabinet door forms a convenient acid-resistant laboratory work table, and a fluorescent light provides correct illumination for the tests. The protection afforded by the cabinet minimizes breakage and eliminates errors caused by dust or dirt. All "A" Series Test Sets are ready for immediate shipment. Descriptive literature available.

STARCHES
DEXTRINES
SYRUP

FOR THE PAPER INDUSTRY

ANHEUSER-BUSCH, INC.
Corn Products Division
ST. LOUIS, MO.

APPLETON WIRES

are Good wires

Appleton Wire Works, Inc. Appleton, Wis.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, September 16, 1942.

BLANC FIXE—Prices on blanc fixe are firm and unchanged and conform to prevailing market levels. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f.o.b., works. Demand reported fair for the week.

BLEACHING POWDER — Quotations on bleaching powder are firm. Demand reported moderate for the week. Bleaching powder is currently quoted at $2.25 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are higher for the current week. Standard domestic casein, 20-30 mesh, is currently quoted at 19 cents per pound; 80-100 mesh, at 19½ cents per pound. All prices in bags, car lots. Argentina casein, 20-30 mesh, at 7½ c.i.f., is nominal. No quotations on French casein.

CAUSTIC SODA—quotations on caustic soda continue unchanged at prevailing market prices. Demand reported moderate. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, car lots, at works.

CHINA CLAY—Prices on china clay are firm and conform to prevailing market levels. Demand reported moderate at this date. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged. Market strong. Government demand is reported heavy during the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported firm for the week with higher prices on some grades. "G" gum rosin is currently quoted at $3.30 per 100 pounds, in barrels, Savannah. "F" wood rosin is currently quoted at $3.30 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $3.55 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand fair for the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton on imported salt cake is nominal.

SODA ASH — Quotations on soda ash are firm and continue to conform to prevailing market levels. Demand reported moderate for the week. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and are reported unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported fair for the current week. The commercial grades are currently quoted at from $1.15 to $1.25; iron free at from $1.75 to $1.85 per 100 pounds. All prices in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. No quotations on imported talc.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	$5.00	@	—
No. 1 Wrapping	4.75	"	—
Standard Wrapping	4.50	"	—
Standard Bag	4.125	"	—
Tissues— Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.05	"	—
White No. 1½	1.00	"	—
White No. 2	1.00	"	—
Anti-Tarnish M. G.	.95	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels. Per Case			
Unbleached, Jr.	2.35	"	—
Bleached, Jr.	2.65	"	—
Manila—per cwt.—C. l. l. *			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*48.00	@	—
Chip	*45.00	"	—
Srl. Mis. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	$4.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers
100% Rag Ext. No. 1	$40.25 @ $47.25		$41.40 @ $48.50
100% Rag	32.20 " 37.75		33.35 " 39.25
85% Rag	.... "		32.20 " 37.75
75% Rag	24.75 " 29.00		25.90 " 30.50
65% Rag	.... "		22.80 " 27.75
50% Rag	18.70 " 22.75		19.90 " 24.25
25% Rag	16.40 " 20.00		17.35 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers
No. 1	$10.55 @ $12.75		$11.70 @ $14.25
No. 2	9.65 " 11.75		10.80 " 13.25
No. 3	9.20 " 11.25		10.35 " 12.50
No. 4	8.90 " 10.75		10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers White, Coated Paper

Delivered in Zone 1

No. 1 Glossy Coated	$13.65	@	$15.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight to Destination.

Bl. Softwood Sulphite	$76.00
Unbl. Softwood Sulphite	64.00 @ 66.00
Bl. Hardwood Sulphite	73.50
Unbl. Hardwood Sulphite	61.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi-Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	66.00
Unbl. Soda	62.00
Groundwood	46.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum price.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	8.00	@	8.25
Silesias No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.15

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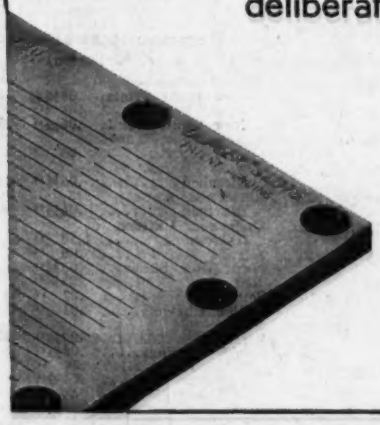

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Special features of the revised edition include:—new methods of wood preparation peculiar to the Pacific Coast and the South; new cooking processes, modifications of the sulphite process, forced circulation, etc.; new developments in recovery processes; improvements in paper machine design, and criticism of these developments based on the author's own experience; recent improvements in ground-wood manufacture; automatic control; new types of equipment—refiners, screens, thickeners, special bleaching equipment, continuous rotary filters and other things new to the industry since the publication of his first book; thorough checking and modernization of all figures as to power consumption, capacity, etc.; and great attention to new acid-resisting materials such as Monel metal, stainless steel, chromium plate, rubber linings, etc.

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Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All prices nominal

New Rags			
New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25
Old Rags			
No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	4.75
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	4.25	"	4.75
Sisal Strings	3.25	"	3.75
Mixed Strings	1.10	"	1.20

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Mixed Books	1.07½	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.35	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	1.75	"	—
Old Corrugated Containers	1.00	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 2 Mixed Paper	.70	"	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1	.07½	@	.07½
New White No. 2	.04½	"	.05
Light Silesias	.04½	"	.04¾
Silesias, No. 1	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached	.07½	"	.07½
Washable Prints	.03¾	"	.03½
Washable No. 1	.02	"	.02¼
Blue Overall	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales	.03¾	"	.03½
New Black Soft	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.	.03	"	.03¼
No. 2 Mixed	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas	.04¾	"	.05¼
New Black Mixed	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope	3.75	"	—
Mixed Rope	.75	"	1.00
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Jute Corrugated Cuttings	.90	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old Corrugated Containers	1.00	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.00	@	4.25
Sisal Rope	4.50	"	4.75
Mixed Rope	1.35	"	1.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	4.50	"	—
Scrap Sisal	4.50	"	4.75
Scrap Sisal for Shredding	4.75	"	5.25
Wool Tares—			
Foreign	(nominal)		
Domestic	5.00	"	5.75
Aust. Wool Pouches	3.85	"	5.10
New Burlap Cuttings	5.25	"	5.50
Heavy Baling Bagging	4.25	"	5.75
Paper Mill Bagging	2.50	"	3.00
No. 2 Bagging	1.35	"	—*

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No. 1	.06½	"	.07
New Light Flannelettes	.06	"	.06¾
Canton Flannel, Bleached	.06¾	"	.07
Underwear Cutters, Bleached	.06½	"	.06¾
Underwear Cutters, Unbleached	6.50	"	6.75
Silesias No. 1	.06	"	.06¾
New Black Silesias	.03¾	"	.04
Red Cotton Cuttings	.03¾	"	.04
Soft Unbleached	.07	"	.07¼
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.03½	"	.03¾
O. D. Khaki	.04	"	.04¼
Corduroy	.03¼	"	.03¾
New Canvas	.07	"	.07¼
B. V. D. Cuttings	.07¼	"	.08

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.30
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.35	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
* Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.57	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 2 Roofing Rags	1.45	"	—